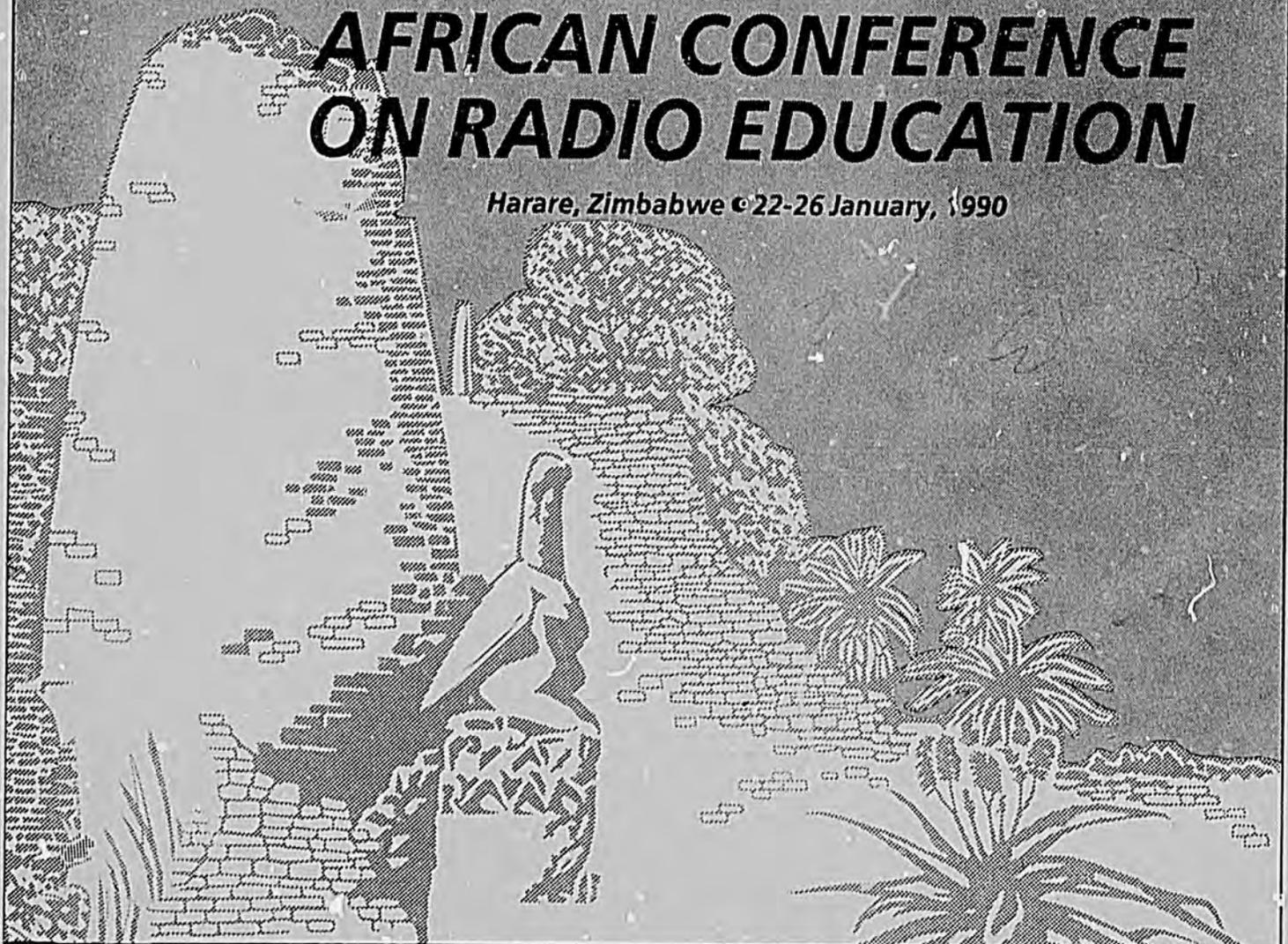


PN-ABG-530
EX 991

AFRICAN CONFERENCE ON RADIO EDUCATION

Harare, Zimbabwe © 22-26 January, 1990



Ministry of Primary and
Secondary Education
Republic of Zimbabwe
P.O. Box 8022, Causeway
Harare, Zimbabwe
Tel: 705-608



Radio Learning Project
Education Development Center, Inc.
55 Chapel Street
Newton, MA 02160
Tel: (617) 969-7100
Fax (617) 332-6405 Telex: 922476

AFRICAN CONFERENCE ON RADIO EDUCATION

Harare, Zimbabwe • 22-26 January, 1990

REPORT OF CONFERENCE PROCEEDINGS



**Ministry of Primary and
Secondary Education
Republic of Zimbabwe**
P O Box 8022, Causeway
Harare, Zimbabwe
Tel: 705-608



Radio Learning Project
Education Development Center, Inc.
55 Chapel Street
Newton, MA 02160
Tel: (617) 969-7100
Fax (617) 332-6405 Telex: 922476

AFRICAN CONFERENCE ON RADIO EDUCATION

HARARE, ZIMBABWE

22-26, JANUARY, 1990

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
Overview	1
Official Opening by Comrade Fay Chung	7
Critical Issues and Problems in Primary and Secondary Education in Zimbabwe (O.E. Maravanyika)	11
Some Critical Issues in Adult and Non- Formal Education (Naran K. Kala)..	22
Educational Radio: A Conceptual Framework (Philip R. Christensen)	27
Teaching by Radio at the Department of Non-Formal Education - Botswana (D. Kelebonye)	37
The Status of Educational Broadcasting in Cameroon (Dr. T.M. Tchombe)	41
The Status of Educational Broadcasting in Ghana (A.G.O. Vandyck and J.W. Bennett)	53
Educational Radio in Guinea (Sow, Aliou)	57
Educational Radio: The Kenyan Experience (Mary Karue)	61
Educational Radio Broadcasting in Lesotho (J.R. Sakoane)	63
Lesotho Radio Language Arts Programme (S. Gcwabe)	66
The Use of Instructional Radio Broadcasts in Primary Education in Liberia (B.R. Jallah)	71
PEP Pilot Radio Project (Bureau of Primary Education, MOE, Monrovia, Liberia)	76
Educational Broadcasting in Malawi (B.G. Muwowo)	78
School Radio in Mali (Neguedougou Sanogo)	82

TABLE OF CONTENTS (continued)

<u>SECTION</u>	<u>PAGE</u>
The Use of Radio and Television as Educational Materials: The Case of the National Educational Technology Centre (NETC) (Dr. Joe De-Goshie)	35
Educational Broadcasting in Swaziland (A.T. Membe)	88
Historical Background of Educational Radio Programmes in Tanzania (Mpumilwa Leonard Z., and Ngailo John L.)	92
Educational Radio Programmes in Uganda (Mary Nyamusana)	114
Educational Radio in Zambia (M.P. Mulombe)	121
The Position of Educational Radio in Zimbabwe (Dr. John Rwambiwa)	126
Formal Educational Broadcasting in Zimbabwe (A.C. Kashambwa)	129
Workshop on Planning and Management (Dr. Carleton Corrales)	135
Workshop on Costs for Radio-Based Education Programs (Dr. Thomas D. Tilson) ..	141
The Economics of Radio Education (Thomas D. Tilson)	143
Workshop on Using Radio to Support Teachers (Maurice Imhoof)	169
Evaluation of Educational Radio Programmes Workshop (Prof. George Eshiwani)	171
List of Participants	173
Educational Broadcasting Survey	181

**AFRICAN CONFERENCE ON RADIO EDUCATION
HARARE, ZIMBABWE
22-26 JANUARY, 1990**

OVERVIEW

The African Conference on Radio Education was held at the University of Zimbabwe, Harare, from January 22 - 26, 1990. Its primary focus was the potential use of radio for addressing critical issues in primary and secondary education, as well as in adult and non-formal education. It was sponsored by Zimbabwe's Ministry of Education and Culture and the Radio Learning Project, a project based at the Education Development Center in Newton, Massachusetts, and funded by the United States Agency for International Development (A.I.D.). The conference was attended by leaders in education and broadcasting from sixteen African countries.

The conference provided African educators an opportunity to discuss ideas and experiences about educational radio in the context of key issues in basic education for children and non-formal educational opportunities for adults. In the area of primary and secondary education, delegates examined the uses of radio to serve different purposes including (a) the enrichment of the curriculum, (b) the teaching of core instructional material in partnership with the teacher (such as interactive radio programs in English, science and mathematics), and (c) non-formal applications to increase access to school. In the area of adult education, the issues of access and quality were examined, and ways in which radio could be employed to address these two critical concerns were discussed.

Delegates presented papers on the status of educational radio broadcasting in their countries. Common themes and experiences were discussed, as were details on script-writing, financing, marketing, and evaluation of educational radio programmes. The conference agreed there is great need for reliable and cost-effective educational broadcasting systems throughout Africa; the delegates resolved to maintain communication with one another and to broaden the network of educators interested in educational radio that was formed at the conference.

Countries represented in Harare were: Botswana, Cameroon, Ghana, Guinea, Kenya, Lesotho, Liberia, Malawi, Mali, Mozambique, Nigeria, Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe. In addition, observers from UNESCO, UNICEF, and A.I.D. attended the conference.

I. OFFICIAL OPENING

The conference was opened by the Honorable Fay Chung, Zimbabwe's Minister of Education and Culture, who stressed the need for African educators to seek ways to improve the quality of education in their countries. The Minister said African governments must seek ways to match the massive expansion of basic education programs in their countries with improvement in the quality of education offered in such programs.

Minister Chung told delegates that Zimbabwe introduced educational radio broadcasting in 1948, and that the system was strengthened in 1982 by the introduction of a special educational channel on the Zimbabwe Broadcasting Service. Educational programs in Zimbabwe are produced by the Ministry of Education's Audio Visual Services Division.

The minister suggested that radio offers African educators a chance to address educational quality issues because "it enables educators to make education more accessible to all people, including those in sparsely populated remote areas where governments of developing countries, for logistical reasons, cannot establish schools."

II. PRESENTATIONS ON CRITICAL ISSUES IN AFRICAN EDUCATION

A. FOCUS ON PRIMARY AND SECONDARY EDUCATION

The conference opened with presentations on the special needs of Africa's primary, secondary and adult non-formal educational systems, and an overview of educational radio. (Full texts of the speeches are on pages - to -).

Dr. O.E. Maravanyika of the University of Zimbabwe's Department of Curriculum and Arts made the first presentation, entitled, "Critical Issues and Problems in Primary and Secondary Education in Zimbabwe." The address focused on the central role education plays in fostering socio-economic development of African countries, and of its importance in the development of all aspects of people's lives. Maravanyika pointed out the mismatch between educational expansion and diminishing resources that is now a problem of Zimbabwe and other African nations.

According to Maravanyika, educators in Zimbabwe and elsewhere on the continent face a wide range of concerns including (a) a shortage of resources, (b) a lack of teachers, untrained and undertrained teachers, (c) an inability to translate educational policies into action, (d) the need to develop a relevant curriculum (e) the need to democratize highly elitist educational systems, (d) educational systems' inability to reach rural populations, (g) political developments and their effects on neighboring countries, for example, the problem of refugees, and (h) donor countries' direct or indirect influence of educational trends.

B. FOCUS ON ADULT AND NON-FORMAL EDUCATION

The second main address was delivered by Mr. Naran Kala, Chief Education Officer for Adult and Non-Formal Distance Education in Zimbabwe's Ministry of Education and Culture, whose presentation was entitled, "Some Critical Issues in Adult and Non-Formal Education." Kala noted that Zimbabwe and other African countries now place great emphasis on the concept of "education for all" as a basic right for their citizens, and that most countries allocate more funds for education than for any other sector. Despite such investment, however, education for all remains an elusive dream for many African countries, and there is a great need to explore more cost-effective educational approaches, especially for adult and non-formal educational systems.

Kala outlined the chief problems of adult and non-formal educators including (a) the need to re-organize existing school facilities for use by adult learners, (b) the need to alleviate manpower shortages by devising part-time employment programs, (c) the need for increased financing of adult and non-formal educational systems, (d) the need for better coordination of adult and non-formal educational systems in order to avoid program duplication, and (e) the very important need to counter prevailing attitudes that adult and non-formal education is a second-rate system for academic failures unable to enter the formal system.

C. FOCUS ON EDUCATIONAL RADIO

The third main address was by Dr. Philip Christensen, Deputy Chief of Party for Program Planning and Control of the Basic and Non-Formal Education Systems (BANFES) Project in Lesotho. Christensen's address was entitled "Educational Radio: A Conceptual Framework" and focused on the possibilities and promises of radio to help improve Africa's educational systems. Christensen addressed three areas; (a) the need to develop new approaches to improving education in Africa, (b) the strengths and weaknesses of radio as an alternative means of attaining Africa's educational goals and (c) a framework for understanding different models of educational radio. He stressed the need for African educators to approach educational planning with a re-examination of assumptions about why, what, and how, they teach, and of looking at educational technology, specifically radio, within such a context.

Christensen cited educational radio's three major strengths: access, quality and efficiency. But he also pointed out three weaknesses of radio as an instructional delivery system: dependence on technology, high front-end costs, and its lack of individualization due to its one-way, centralized nature.

Christensen then described various models of instructional radio which he categorized as serving either in-school or out-of-school learners. The former category includes schools broadcasting, a major example of which is interactive radio instruction (IRI). Schools broadcasts are aimed at children in schools and are supplementary in nature. They reinforce the primary instruction, which is delivered by other means, generally through the teacher and textbooks. Teachers use school broadcasts to help cover certain objectives or units of the curriculum. Radio programs for out-of-school audiences include development campaigns and community-based radio. The former address certain themes such as improved health care for families, and help promote new ideas and attitudes. Community-based radio programs are generally sponsored by non-governmental organizations and are entirely devoted to community development.

Christensen discussed IRI as a highly participatory, school-based methodology with a proven record of covering the entire curriculum in core subject areas such as mathematics, English as a second language, Health and Science. He also examined distance education as a model that has successfully been used to cover the core curriculum for out-of-school audiences. The presentation urged African educators to give radio a chance to help them meet some of the pressing challenges facing their educational systems.

III. COUNTRY REPORTS: EDUCATIONAL RADIO IN AFRICA

Reports of educational broadcasting in the sixteen countries represented at the conference revealed common experiences and a shared vision for future development of educational radio in Africa. African educators generally place a high priority on the use of radio for basic education, both in primary schools and out-of-school situations. For example, in Botswana, the educational channel broadcasts lessons for primary school children on social studies, science, current affairs, English speaking and storytelling in 15-minute segments for seven hours a day. Children in the six primary grades in Nigerian schools receive regular radio instruction in English, math and social studies.

In Cameroon villagers listen to radio programs such as "Health," "The Changing Rural and Agricultural World," "Calling the Women" and "Kid's World." Zimbabwe's Channel Four is specifically designed to broadcast educational programs for out-of-school audiences, and in Mali programs such as "Green Sahel" and "Agriculture on the Air" are broadcast in local languages every Friday for peasants, fishermen and shepherds throughout the country. In Ghana, Guinea, Kenya, Liberia, Lesotho, Mali, Nigeria, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe, daily or weekly radio programs are aimed at specific target groups such as farmers, youth, women and children at the lower grades. Officials in African ministries of health, education, agriculture and social service agencies have demonstrated growing interest in using radio to reach rural populations with their information and messages.

Participants discovered that radio education often faces similar problems from country to country. Most common are technical difficulties caused by lack of high-quality broadcasting equipment and insufficient trained personnel and, in households and schools, a lack of radios, batteries and repair services. In some cases, radio programs are poorly designed or there is a lack of coordination between various ministries using radio education. In schools, teachers sometimes do not understand how to use radio programs to complement classroom instruction and often lack supplementary materials. Other problems include a lack of resources to produce new programs, resulting in the broadcast of out-of-date programs, and a lack of evaluators to measure effectiveness of radio programs.

The conference resolved to strengthen Africa's experience with educational radio by fostering closer collaboration between educators interested in educational broadcasting, and by sharing information and expertise in radio education program design and implementation.

IV. WORKSHOPS

There were four workshops during the conference to give participants a chance to discuss specific aspects of educational radio. The topics addressed were: (1) economics of radio education programs, (2) using radio to support teachers, (3) interactive radio instruction, and (4) evaluation of educational radio programs.

The workshops were led by experts in the educational broadcasting field. Dr. Thomas Tilson, Director of the Radio Learning Project, led the discussion on the economics of radio education. The session on using radio to support teachers was led by Dr. Maurice Imhoof, a language specialist who was the U.S.-based Director of the Radio Language Arts Project (RLAP) which was field-tested in Kenya between 1979 and 1985. Dr. Imhoof is currently serving as a Radio Language Arts specialist at the BANFES project in Lesotho.

The workshop on evaluation was led by Professor George Eshiwani, Principal of the Jomo Kenyatta College of Agriculture and Technology in Kenya. Professor Eshiwani conducted the first comprehensive evaluation of the RLAP and now serves as a consultant to the Radio Learning Project. Dr. Philip Christensen, Deputy Chief of Party for Program Planning and Control at Lesotho's BANFES Project, led the workshop on IRI. Christensen was Field Director of the RLAP in Kenya between 1980-85.

V. REMARKS BY DONOR AGENCIES

Representatives of several major donor organizations - USAID, UNESCO, UNICEF, and the World Bank were asked to inform the delegates about how their organizations operate in terms of funding priorities and the process for designing their financial assistance. The purpose of these presentations was to guide delegates in terms of appropriate follow-up activities relating to the donor organizations.

VI. SUMMARY OF IRI ACTIVITIES

One session was devoted to a presentation of IRI in Africa and elsewhere. Professor Eshiwani and Mrs. Mary Karue, a language specialist with the Kenya Institute of Education and a former RLAP staff member, described how interactive radio worked in the RLAP for teaching English to children. They showed a videotape of RLAP classes.

Sarah Gcwabe, head of the English division of the National Curriculum Development Unit in Lesotho, described how they adapted the RLAP series for use in Lesotho. She showed a video tape that included IRI English classes in Lesotho.

Dr. Carleton Corrales, General Manager of AVANCE, a private institution in Honduras developing IRI programs, gave a presentation on their new mental arithmetic series. The program, called The Number Family, is designed to complement existing mathematics textbooks by focusing on mental calculation skills and the application of math to everyday life situations. He showed a videotape of an interactive radio mathematics program being used in Bolivia.

VII. OTHER RADIO-BASED PROGRAMS

There was a session to review examples of other radio-based educational programs. Nikki Ashley described her work in Zambia as part of the Wildlife Conservation of Zambia organization. She is responsible for developing several radio-based educational programs for children that focus on environment and conservation issues.

Liberian delegates Edwin Clarke and Raymond Jallah briefly described the Liberian Rural Communication Network (LRCN) and showed a videotape of this project. The LRCN is a network of community-based radio stations committed to the development of Liberian rural areas.

Finally, Thomas Tilson gave a brief presentation on the IRI Radio Science Project in Papua New Guinea where a radio-based science curriculum is being developed for children in grades 4-6.

**OFFICIAL OPENING BY COMRADE FAY CHUNG, MINISTER OF PRIMARY AND
SECONDARY EDUCATION, REPUBLIC OF ZIMBABWE 22 JANUARY 1990**

Chairperson,

Distinguished delegates,

Comrades,

Friends,

Ladies and gentlemen.

I am pleased to be with you this morning, because I believe this Conference on Radio Education is an important one, and may assist in bringing about a qualitative improvement of education in Africa.

I would like, right at the outset, to thank the United States Agency for International Development for sponsoring this Conference. My special thanks go to Dr. Tilson, Director of the Radio Learning Project and to all his staff for jointly planning and organizing this Conference with members of the Adult Education and Distance Education Section of my Ministry.

Ladies and Gentlemen, we have gathered here to consider how radio can be used more effectively to help developing countries to respond to the tremendous need for increasing access to and improving the quality of basic education. This is a very important and challenging task indeed. An African Conference on Radio Education is evidently long overdue.

During the colonial period only 12 percent of black children who graduated from the primary school in Zimbabwe were allowed to go for secondary education. The rest joined the labor market mainly as a cheap semi-literate or illiterate labor force. For white children, transition to secondary education was one hundred percent. Ladies and Gentlemen, it comes as no surprise, therefore, that equity and access to education have been the pre-occupation of the government of this country since independence.

Today the cheap labor force theory of development is largely discredited. Those countries which have achieved spectacular development in the last few decades such as Japan and the newly industrialized countries (NICS), did so by first providing primary education for all and secondary education for large numbers. The development of their national human resource base was the essential pre-requisite for all other forms of development. This is the line of development that the Zimbabwe Government believes is the correct and productive one for Zimbabwe.

The Zimbabwe Government regards education to be a basic need and a fundamental right of each child. It perceives education to be a facilitator not only of better living conditions for its citizens but also of job creation and industrialization. It allocates a high proportion of the national budget, about 20 percent, to education annually. The Government made primary education free in September 1980 and this ushered in an era of universal primary education. I am happy to inform the delegates that in Zimbabwe no child is denied a place in primary school.

To attain universal primary education and to increase access to secondary education, since independence in 1980, my government has, through the Ministry of Education, embarked on a massive school building programme. Schools sprang up throughout the country, often undertaken with great sacrifice by local communities. The number of primary schools rose from 2,401 in 1979 to 4,504 in 1989 and that of secondary schools rose from 177 in 1979 to 1,507 in 1989. This massive expansion of facilities continues especially at the secondary level because existing schools cannot accommodate all the primary schools graduates.

School enrollments have also increased during the past ten years. Enrollment in grades 1 - 7 rose from 819,586 in 1979 to 2,274,178 in 1989. At the secondary level enrollments rose from 66,215 in 1979 to 695,882 in 1989.

Whilst this quantitative expansion has been matched with qualitative improvements in the primary education sector, the secondary education sector is not as satisfactory. Much more needs to be done to provide a more relevant and higher quality education.

Similarly the whole area of non-formal and adult education catering for a potential clientele of 4m in Zimbabwe could benefit from greater inputs into relevance and quality. Unless the vast majority of our population is sufficiently educated and skilled Zimbabwe cannot attain its fullest potential in development terms, for it is people who develop, and under-development begins generally with underdeveloped people. That is why it was a consistent colonial policy to leave the large majority of Africans illiterate or semi-literate.

I am sure that what is true of Zimbabwe is true of Africa as a whole: that we all suffer the same problem of the serious under-development of our people.

It is in this context that radio can assist in providing children and adults with a medium for both education and entertainment, particularly for education in exciting and entertaining ways. This is an exciting medium which is both cost-effective and popular. For a relatively small investment it can have a major impact.

In developing countries in particular radio can play a key role. First, radio enables us to make education accessible to all people including those in sparsely populated remote areas where governments of developing countries, for logistical reasons, cannot establish schools. In such areas basic and informal education can be delivered in non-formal settings to children and adults.

For example, in the Dominican Republic, children learning by radio, but without schools, are keeping pace with their peers in schools. And Radio Santa Maria in the same Republic teaches basic literacy skills to motivated adults with high rates of success. This however can only be done if the people concerned have access to radio receivers and the country's transmitter network is powerful enough to reach every corner of the country. Second, radio instruction can also bring expert instruction into the classroom in support of the inexperienced and under-qualified teacher. Radio instruction thus compensates for the lack of qualified teachers and indeed it compensates for the lack of any other educational resources such as facilities, equipment and text-books.

Third, effective and imaginative radio broadcasts of lessons make learning more memorable at all levels. Radio thus offers opportunities for improving learning in all subjects and research has shown that radio instruction, if properly planned and managed, can enrich the experience of pupils who, when they are not in school, are accustomed to gaining information and entertainment as much from radio as from books.

Fourth, radio instruction enables learners to assimilate facts quickly and accurately. International programmes on radio learning instruction in Mathematics, English and Science by the United States Agency for International Development in countries such as Papua New Guinea, Honduras, Kenya and Lesotho, to name just a few, have shown that radio instruction can even be more enriching to the learners if teachers play an important instructional role during the radio lesson. Teachers can give learners immediate feedback; they can also give learners practice in reading and writing and can attend to the needs of their pupils. When learners receiving instruction by radio were compared with those receiving conventional instruction in all the interactive radio instruction studies sponsored by the U.S. Agency for International Development, it was found that radio learners achieved higher scores than their counterparts who received conventional instruction.

These results are very gratifying to us in the developing countries since we cannot educate all our people and give them high quality education through the conventional methods despite setting aside each year a high proportion of the national budget for education. Radio may be the answer to the tremendous need to increase access to and to improve the quality of basic education and technical education for that matter, in developing countries.

Ladies and Gentlemen, it is not my task to share with you the Zimbabwean experience in educational broadcasts. I leave that to my delegates. What I wish to say in this regard, is that formal educational broadcasting in this country started in 1948 and that it falls under the auspices of my Ministry (Ministry of Primary and Secondary Education) and the institution charged with the responsibility to produce formal educational radio programmes is the Audio Visual Services (A.V.S.). Further, I wish to point out that in Zimbabwe educational broadcasting was boosted by the establishment of the Z.B.C. educational channel on Radio 4 in October 1982. And in 1985 the A.V.S. acquired and installed new studio recording equipment which greatly increased studio time and the capacity of A.V.S. to produce more programmes. Despite these developments our educational channel, Radio 4, is under-utilized. I sincerely hope that after this Conference all those concerned will be equipped with the necessary skills and knowledge to enable them to work out a strategy for using radio to make maximum use of this channel.

In conclusion, I most sincerely wish to congratulate you for having been able to come to this conference. It is also my sincere hope that you will enjoy your stay in Zimbabwe and that you will find your Conference to be intellectually and professionally challenging and rewarding.

It is now my honour and pleasure to declare this African Conference on Radio Education officially open.

CRITICAL ISSUES AND PROBLEMS IN PRIMARY AND SECONDARY EDUCATION IN ZIMBABWE

O.E. Maravanyika

Senior Lecturer,
Department of Curriculum and Arts,
University of Zimbabwe

EDUCATION AND DEVELOPMENT

Education has long been recognized as an important element of development because of its ability to raise a people's political and social consciousness which, in turn, should direct the course of that development. Education also provides technical, professional and managerial skills that are important in helping the realization of developmental objectives. Up to about the mid 1960s, development was seen largely in economic terms. In the developing world, this meant the development of small urban commercial and industrial sectors at the expense of rural areas, where the majority of the people live.

The school, with its urban-oriented curriculum, became an agent of selecting a few people from rural areas for urban jobs which provided financial security, affluence, (in relative terms) prestige and modern style of life. The social demand for schools thus increased disproportionately to the jobs available in urban centers. It was therefore necessary to broaden the view of development beyond the narrow focus on economic production to include such factors as the improvement of the welfare of the wider population by providing goods and services needed to eliminate the manifestations of poverty such as disease, malnutrition, illiteracy and squalor.

This broadened view of development called for a new conception of the relationship between education and development, where the poor could also significantly contribute towards not only their own betterment but to general economic growth as well. Thus, education is now seen as a basic human need which enables individuals to acquire a broad base of knowledge, attitudes, values, and skills on which they could build in later life. Such education also provides the potential to learn, to respond to new opportunities, to adjust to social and cultural changes, and to participate in the political, cultural and social activities of the local community.

Education also acts as a means of meeting other basic needs such as adequate nutrition, safe drinking water, health services and shelter. In turn these tend to improve learning capacity and ultimately the individuals' productivity and income. Lastly education is seen as sustaining and accelerating overall development. It prepares and trains skilled workers at all

levels to manage capital, technology services and administration in every sector. Development projects are not well implemented unless investment of capital and transfer of technology are accompanied by adequate human knowledge and skills.

Thus the main issues and problems in primary and secondary education can best be understood within the context of this broad background where developing countries including Zimbabwe regard education as a good that should be provided among the broad mass of the people as a basic for their overall development. Development is seen not as economic development. For as Nyerere said, development is about people but people cannot be developed. They can only develop themselves. The propensity among politicians, especially in post colonial Africa, to provide more education is neither guided by altruistic and egalitarian values nor is it an act of charity. It is largely due to political and social pressure from mainly rural constituencies who see in education a way for their children to escape rural poverty. The pressure for more schools intensifies in spite of the fact that the existing schools produce more candidates for the dwindling job market than the economies are able to generate jobs in the modern sector.

Unfortunately, this inability of the expanded education systems to fulfill the people's expectations has not diminished the demand for education. Thus, a number of issues and problems in education arise out of attempts to provide worthwhile education to the broad masses of the people within the context of ever-diminishing resources, varied and sometimes conflicting expectations from different sections of the community. This affects the whole process of decision-making from those concerned with policy concerns. Issues on curriculum relevance or worthwhileness, allocation of human and material resources, teacher training, assessment or evaluation, as well as broader issues such as external and internal efficiency of the system, are at the center of such debate. Questions such as who shall be educated, to what level, at whose expense, following which curriculum, and for what purpose, are pertinent but not always easy to answer.

External Influence

In spite of efforts to localize the decision-making process in an effort to provide home-grown solutions to local problems, there are still a lot of outside influences in the process of decision-making on education in developing countries. Developing countries belong to a number of international bodies whose activities have a bearing on education in the developing world, either through indirect influence, or directly through donor assistance. Developing countries enter into bilateral agreements with a number of agencies which tend to lend or donate funds in areas where they have an interest, and where they consequently

might end up influencing the direction of events. Apart from lending or donating funds or equipment, these agencies have access to resources and easily accessible information on third world countries than do these countries themselves. This puts such agencies and organizations in a powerful position.

The World Bank paper on Education in Sub-Saharan Africa is one such document. UNESCO, UNDP, UNICEF and the World Bank are sponsoring an International Conference on Basic Education for All in the 1990s in Bangkok in March this year. Participating countries have been invited to produce working papers based on suggested guidelines prepared by the agencies. In a sense, this is a way of influencing both the agenda and trends in education in the decade ahead. The World Bank paper Education in Sub-Saharan Africa has probably been one of the boldest statements by a leading lending agency to the developing world. Bluntly put, its message to countries in the region is that public funds are best used in primary and basic education rather than in secondary and higher education because private rates of return are higher in secondary and higher education than in primary education. Thus beneficiaries of secondary and higher education should pay more for schooling, as private returns to the individual are higher. There have been different and varied responses to this paper. The point however is that using its financial muscle, the World Bank can in fact influence the direction of educational policy in those countries that would like to borrow from it.

Regional organizations such as the O A U Ministers of Education, Commonwealth Ministers of Education, and others have some influence on educational development in member countries. The 1961 Addis Ababa Conference encouraged, among other things, all participating countries to achieve Universal Primary Education by 1980. Other regional groups such as NEIDA sometimes indirectly influence educational decisions in member countries.

A study of educational policies in the region, and attempts to implement these policies, reveal certain rather common characteristics. These include pressure on the systems to expand, despite the fact that their sluggish economies cannot generate enough jobs for school-leavers, and despite manpower shortages at all levels to manage the systems. Shortages of materials including books, desks, chalk, and other teaching materials are common problems in African schools. There is also poor physical infrastructure in schools including shortage of teachers' houses, lack of adequate laboratories and workshops.

Attempts have been made to localize the curriculum but there are vested interests for the status quo. Vocational education has been attempted in a number of countries in the region but parents and children tend to regard practical subjects as options for the intellectually weak. Most African countries have attempted to involve marginalized groups in education but results

are inconclusive with regard to success or failure. Educational systems in Africa also show evidence of internal inefficiency, examples of which are dropouts, large classes, and grade repetition. In situations like that, there is an almost inevitable decline in average academic performance.

In a paper entitled "Why Educational Reforms Fail: A Comparative Analysis, Psacharopoulos traces the fortunes of educational policy initiatives from nine countries in the eastern and southern African region. Although stated differently, almost all the policy initiatives are concerned in one way or other with issues concerning increasing coverage, improving teacher quality, combining education with production, teaching in local languages, diversifying the curriculum, increasing links with employment, meeting manpower requirements, providing skills needed in a modernizing economy, promoting local cultural values and concern with political ideology. Most of these initiatives have met with little success. According to Psacharopoulos, the reasons appear to be that in some cases the intended policies promote development though it might be argued that the system is still rather inefficient. More worrying is the perpetuation of inequality within the secondary school system itself due to the existence of different types of schools. Zimbabwe has different types of schools which include private schools, mission schools, government group A, government group B, government rural, and rural council schools. The O-level pass rates at these schools tell a story; for example, in 1984, 57% of candidates in private school gained five or more O-level passes, 45% in mission schools, 30% in government group A, 22% in government group B, 185 in rural government schools, and 145 in rural council schools.

Persistent Educational Inequalities

Despite governments' attempt to reduce and eventually eradicate inequalities in education, some still remain. A major example is rural/urban inequality of access to good quality education. For example, in Zimbabwe, parents in rural areas generally have little choice of school for their children beyond the nearby Council schools, which are still very poorly financed, unless their children do extremely well in Grade 7 examinations, and can then compete for places in mission schools or government Group B schools.

Rural parents are also generally poorer than urban parents. Since secondary education is not free, rural boys, rather than girls, tend to be sent to school. The drop-out rate for girls is also higher than that for boys, even though fewer girls than boys proceed to secondary education. Generally these adverse factors affect persons with between two to four years of secondary education. By 1986, 46% of all primary school teachers were unqualified while 12.4% were student teachers.

Secondary Schools

Secondary schools also lose teachers to industry and other more attractive divisions of the public sector hence the need to recruit additional teachers from the primary sector and from outside the country. By 1986 10.5% of all secondary school teachers were trained secondary graduates, 5.6% were untrained secondary graduates, 17.7% were untrained non-secondary graduates, 18.8% trained primary graduates, 11.% non-graduate student teachers and 35% were untrained. The majority of the under-trained and untrained teachers were largely in the new rural council secondary schools.

Quantity or Quality in Education

Government policy aspires to achieve both quality and quantitative expansion. It aims at providing a common curriculum to "O" level for all pupils regardless of ability and location. This is largely a response to the public's social demand for education and is consistent with the government's egalitarian philosophy. Drawbacks, such as declining examination success for the vast majority of pupils, are looked upon as temporary. For example, in 1980, 66.6% of O-level candidates had five or more passes, representing 4,008 pupils. By 1986, the percentage pass had dropped down to 11.4%, but representing 14,566 pupils. In absolute terms, Zimbabwe has embarked on an ambitious manpower development program but poor facilities, such as inferior housing, and lack of running water and electricity, have made it difficult to attract trained and experienced staff to many schools. Therefore, many schools are largely staffed with primary trained and untrained teachers.

It is estimated that by 1984 only 20% of teachers in these upper sections were secondary trained -- as opposed to 86% in government group A schools, 44% in government group B, 72% in mission schools, 99% in private schools, and 44% in government rural secondary schools. Rural councils administration of these schools is a cause for concern. For example, there was a tendency to use government per capita grants on administration rather than on buying books and stationery for schools, thus affecting the quality of learning in rural schools. There was a genuine fear that the quantitative gains made in establishing the schools might not be matched by quantitative improvement in their delivery systems.

STAFFING

Primary Schools

The phenomenal expansion in secondary schools meant that a number of primary-school-trained teachers were asked to teach in these secondary schools, thus depleting the pool of available trained teachers in primary schools. The teaching service was thus opened to experienced untrained teachers with basic Standard 6 qualification (Annual Report 1981.6) -- that is, teachers with eight years of primary education.

Expansion in Education

Expansion in education was justified on the grounds the education was a fundamental human right. Education was regarded as being basic to economic growth and to the development of a socialist society. Society generally looked, and still looks, at education as the key to jobs in the modern sector of the economy and therefore to upward mobility and a better standard of living. The new government announced the introduction of free primary education in 1980. As a result, enrollments soared from 819,586 in 1980 to 2,251,319 in 1987. The government estimates that up to 97% of children of primary school age are in school. An even greater explosion occurred in secondary schools, with an increase from 66,215 in 1979 to 694,652 in 1987. The transition rate from primary to secondary school rose from about 20% in 1979 to about 70% in 1987.

In order to finance this expansion, the government vote to education increased from 11.6% in 1979 to 22.1% of the total budget in 1980. It has gradually climbed down over the years and stood at 16% in 1987, representing \$704,510,000.00 in Zimbabwe dollars. Local authorities would be in charge of all primary education except the payment of teachers' salaries, while government would concentrate on secondary and higher education. The number of primary schools nearly doubled from 2,401 in 1979 to 4,439 in 1987, while secondary schools increased from 177 to 1,395 in the same period. Until buildings could be put up, the majority of the new secondary schools were largely in rural areas under the supervision of District Councils. All hoped that education would assist the new nation in its development, and the search for cultural relevance in the curriculum, relating education to the world of work, creation of political consciousness, passing to young people the values of socialist ideology, based on Marxism-Leninism, and economic renewal in the long neglected communal lands, became key considerations in educational planning.

In short, at independence, Zimbabwe saw reforms in education as involving fundamental changes in national educational policies and sought to initiate major changes in the following:

1. National allocation of resources to education
2. Allocation of resources within the existing educational system
3. The percentage of students completing different levels of the educational system.
4. The percentage of pupils from different social backgrounds, and the percentage of female students that complete different levels of the educational system.
5. The aims of the curricula and their content.

The above concerns were intended to represent a policy shift from a colonial elitist system of education to mass education, which would create a more egalitarian society, expand and modernize the economy, and generally act as an essential element in nation building. Many political statements were made, for example: there should be free education, and vocational schools shouldn't be boycotted by parents who send their children to academic schools. My intention in mentioning these examples is not to highlight failure; rather, the aim is to expose the conflict between the intentions of policy makers and the ability of their systems to support programmes that would assist in the achievement of stated objectives.

THE CASE OF ZIMBABWE

Although Zimbabwe had its own unique experiences during the colonial era, it has not escaped from the international and regional influences referred to above. Indeed, its late birth and arrival into the international arena has given it a somewhat visible profile.

At independence, the new Black government of Zimbabwe aimed at transforming a racist capitalist society, economically divided between the subsistence sector and the commercial sector, into a non-racial socialist state where status would be achieved rather than ascribed on the basis of color. Primary education was declared free.

More secondary schools were built to enable up to 70% of primary school leavers to proceed to secondary school, as compared to a maximum of 20% in the colonial era. It was hoped to affect rural folk more than urban dwellers. According to the Minister of Education and Culture "We have to confess that of the 1,502 secondary schools, only 800 are good, which means that we have a stiff challenge in improving the other 700: (The Herald Sept 28, 1989:11). The majority of these 700 hundred schools are likely to be rural Council Schools. Thus although the government

has sought to redress the inequalities inherited from the past, there are still serious educational disparities, especially between rural and urban, the rich and the poor, and between boys and girls.

CURRICULUM RELEVANCE

Since independence, attempts have been made to make the Curriculum more relevant to the perceived economic and cultural needs of Zimbabwe. Thus, the teaching of local languages has been encouraged from Grades I to III. The philosophy behind Education with Production was to prepare pupils at all levels of the school system for the world of work.

At secondary level, the 1986 initiative on vocationalizing the curriculum was again intended to emphasize the role of education in preparing the young for the world of work over and above normal academic work. Zimbabwe is the latest among the many developing countries which have embarked on similar initiatives. Some reasons used to justify a vocational technical curriculum include vocational education's ability:

- i. To alleviate employment
- ii. To re-orientate students' attitudes towards work
- iii. To halt urban migration
- iv. To transmit skills and attitudes useful in employment

Most of the available literature on the subject suggests caution and a need for through planning, which should include substantial provision of both human and material resources. It is too early yet to pass judgement on the success or failure of this initiative since it is still at pilot stage, but there are already tell-tale signs that vocational education in Zimbabwe might benefit from a more generous provision of both human and material resources, if it is to succeed.

DONOR INVOLVEMENT

Mention has already been made of donor agencies and other external interested parties that influence the nature and direction of educational debate in developing countries. In some cases, such groups are invited; in other cases, they offer assistance, ostensibly in the light of their wide experience elsewhere. Zimbabwe has benefitted quite a lot from donor assistance since independence. One case of assistance is the Basic Education and Skills Training Programme (BEST), funded through USAID. The BEST Programme identified the following as key constraints inhibiting the realization of Zimbabwe's educational development objectives.

1. Limited resources
2. Insufficient numbers of trained teachers and instructors
3. Inappropriate instructional curriculum
4. Inefficient or inequitable spatial allocation of educational training facilities
5. Insufficient planning capacity.

A number of projects have been carried out in order to reduce the above constraints under the BEST Programme. These include provision of equipment and workshops in teachers and technical colleges. An example is Belvedere College's Technical Subjects Kits Project, which facilitated the teaching of practical subjects, especially in rural areas. Another project initiated under the BEST Programme is the training of middle-level manpower through the M Phil and D Phil Programmes in the Faculty of Education. The programme has also assisted in building or augmenting educational research capacity in the faculty by assisting in the establishment of the Human Resources Research Center, which trains students and staff in computer literacy.

SIDA, the Swedish International Development Agency, has also assisted in a number of areas in primary and secondary education. It has assisted in the construction of houses in primary and rural day secondary schools, especially in disadvantaged areas.

In curriculum development, SIDA has assisted in the Zim-Sci Project, which enabled the teaching of science to take place in rural areas without running water or electricity. It has also taken part in the practical subjects kits for rural areas, in the supplementary readers' project intended to increase the number of relevant library books in circulation in schools, in staff development, especially for technical subjects. The agency has also helped by supporting lecturers at the U.Z., in financing Zimfep, building standard accommodations for E.O. and D.E.O.s in rural areas and in supplying vehicles to the ministries for these projects. Such interactions with donor agencies were agreed upon after serious deliberations with relevant government officials in identifying key problem areas which tend to coincide with donor interests.

The Secretary's Report for 1981 aptly summarizes the issues and problems in education. It says: "1981 was a year of shortages of everything but children" (pg 2). The secretary goes on to indicate shortage areas in both primary and secondary schools. In primary schools, the pool of qualified staff quickly dried up, some moving to secondary schools; there was a backlog of housing, shortages of books and other school supplies, as well as a shortage of furniture and equipment.

In secondary schools, the widening of the bottleneck between primary and secondary classes resulted in a transition rate of 80% from 20% the previous year. This had serious implications for provision of human and material resources. The secretary cites problems such as shortage of classrooms, workshops, readers' houses, laboratories, equipment for specialist teachers, etc.

Some schools were forced to introduce hot-sitting, which created its own problems. For example, time-tabling, especially of specialist rooms, accelerated wear and tear of physical plant and furniture. In rural areas, there were problems of isolated groups of untrained, inexperienced, poorly-housed teachers. Many teachers had no qualified head to assist them. Rural areas were the worst hit, with all kinds of shortages.

The Ministry of Education, using its own resources and those provided by the donor community, has, over the years, attempted to reduce some of these constraints. By introducing hot-sitting, for example, schools have been encouraged to make maximum use of available infrastructure such as library facilities, classrooms, workshops, and laboratories. The Ministry has modified teacher education programmes so that, at any one time, many pupils are taught by teachers with at least some survival skills, as has happened through Zintec and Zintecization of conventional colleges. The Ministry has also mounted in-service courses for headmasters to enable them to assist the many unqualified and under-qualified teachers in their schools. It has also mounted curriculum development workshops aimed at producing teaching materials, especially for the disadvantaged rural schools. The Ministry has established an evaluation unit which monitors most of the projects on stream. One could go on and on. These are brave and bold efforts indeed for a developing country with meager resources. And, yet, still more needs to be done to consolidate the gains and to sustain the momentum.

But there is a sense in which the fortune of countries in the world today are to a greater or lesser extent affected by those of their neighbors and events far beyond. There is a general qualitative transformation of the nature of the relations between East and West, which might, in time, affect the nature of the relationship between North and South, both politically and economically. Indeed, the debate about the terms of trade is undergoing a qualitative change because of technological advances. As Gorbachev put it on the eve of his meeting with Bush off the coast of Malta, "The world is on the threshold of an entirely new era. What mankind needs is the revolution of the mind, habitual stereotypes must be abandoned and advocates of different ideologies must recognize that no one has the monopoly of truth."

Zimbabwe and the rest of Sub-Saharan Africa need to seek solutions of yesterday and today's problems in the context of an uncertain future. We need to use scientific research in the search for solutions to our problems in planning so that decisions are based on authentic information rather than on good will intuitions of policy makers. Unless we abandon the old recipes to problem solving and use research findings instead, we are in danger of being trapped in a vicious time warp.

SOME CRITICAL ISSUES IN ADULT AND NON-FORMAL EDUCATION

Naran K. Kala, Chief Education Officer
for Adult and Distance Education
Ministry of Education, Zimbabwe

Before we look at and discuss some of the issues in adult and non-formal education, it may be useful to try and place the subject of education into some context.

For decades now, countries the world over, particularly newly independent and developing countries, have been grappling with the problems of general development and nation building. Like others, countries in Africa recognized that a crucial element in this nation-building process is the development of human resources through education and training. Additionally, of course, they recognize that education is a basic human right for all, for children as well as adults, for both men and women. So developing countries have committed themselves towards providing education for all their people (E.F.A.).

As a consequence, vast amounts have been invested in education, especially formal education, in many instances as much as 20% of the G.N.P. Indeed more money has been spent on education than on any other sector. Here in Zimbabwe, for instance, education receives 22% of the national budget - more than Health and Defense combined - and this amount is the fifth highest percentage in the world, a clear indication of the importance that is attached to education.

Yet in spite of these massive expenditures on education, it has not been possible for third world countries to provide E.F.A. through the conventional system, i.e. through building more schools and classrooms, training more teachers and paying them and buying more texts, desks, etc. It is first just too costly to provide E.F.A. in this manner.

Various other factors have also made it increasingly more difficult for our countries to provide E.F.A. Indeed, the goal of E.F.A. in 1990 appears to be further away than a decade or 50 years ago. African countries have been plagued by natural disasters, drought and famine. Our countries and peoples have been ravaged by wars, by the threat of wars. The total military expenditure in the industrialized and developing worlds exceeds the combined incomes of the poorer half of the world's countries. If only 10% of this vast sum was diverted we could almost immediately meet the educational needs of all our people. The decline in the price of raw materials and products, prices that are determined by the world money market, has led to further deterioration in the economic situation and to make matters even worse, the western industrialized nations have reduced their aid programmes from the 0.70% that it was in the 1960s to today's 0.35%.

The net result of the economic crisis confronting our countries is that it has had a most telling effect on education provision across the board. Most governments have had to make severe cutbacks in their education budgets in an attempt to meet their debt obligations and address what they consider to be more pressing needs and issues. In the process, public expenditures on education have declined dramatically over the decade. And the damage that is being done in terms of human capital is incalculable and will be permanent, for investment in human capital cannot be postponed. It either takes place at the appropriate time or it does not. In the words of the Director General of UNESCO, "What is so pre-occupying is that the greatest damage seems to have been done at the very foundation of the educational pyramid, i.e., in primary education and in basic literacy for adults and out of school youths."

This is the reality of the situation in most Third World countries. Under such circumstances what should we do? Those of us who are in education and are educationists should not be debating the critical place and importance of education in overall development. In spite of the direct economic problem, we accept that education is a necessary though not a sufficient condition for development.

So what we should be doing is to investigate new, more cost effective and short-cut approaches to provide this much needed education for our peoples. And this is why we must look seriously to adult and non-formal educators. For, properly planned, organized and funded adult and non-formal education programmes are cost effective and may therefore provide us with some answers to the problems of education expansion. Perhaps, and more importantly, because they are not so institutionalized it may be easier to design and fashion an adult and non-formal education program in such a way as to make the educational provision here more immediately relevant and utilitarian.

Adult and non-formal education refers to any organized educational activity outside the established formal education system - whether operating separately and independently or with government involvement and support. Adult and non-formal education is certainly not the prerogative of one department or organization, although, for purposes of coordination it would be useful to have one body which has a supervisory role. The courses offered are varied; they are short, practical, and part-time, often with no rigid entry requirements and many are non-certificate oriented. Perhaps a better picture emerges if we describe the clientele or potential clientele for adult and non-formal education programmes.

- o There are the workers on the commercial farms, in firms, factories and industries who are employed but whose level of education is probably low and who would want to further their education and skills through part-time, day release, evening or correspondence classes.
- o Poor peasant populations in the rural areas in the villages and homesteads who may be self employed, under employed or unemployed - all of whom are attempting to scrape a living from the land or from within the informal sector. The majority here are illiterate or semi-literate and many are women and girls. They are mostly unproductive and inarticulate, unaware of their rights and responsibilities and unable therefore to participate in any meaningful way in local community and national affairs. They need functional literacy and basic skills which will enable them to uplift themselves and their communities.
- o There are the thousands of children of school age who are unable to attend school both in the urban as well as rural areas - because their parents cannot afford it - or simply because the schools, the teachers, and the texts are not there.
- o The school dropouts or, more correctly, push-outs, especially girls, whose education, or shall we say "schooling," is abruptly terminated. Somehow programmes need to be devised to enable them to complete their schooling with a modicum of skills training so that they can at least fend for themselves.
- o There are also the school graduates, thousands of primary and secondary school leavers - the educated unemployed and unemployable because the education they have received is, in the main, academic and certificate oriented, but has not been geared or related to the job market, to the economy, or to self reliance.

This is a vast and varied group of people whose educational needs are often marginalized. Yet they are potentially larger than their counterparts in the formal system. Their native energies and talents need to be tapped and channelled into productive social, civic and economic activities. They must be given the tools, the basic education and skills to become involved and participate in local and national programmes. Otherwise it will not be possible to lay a firm foundation for the social economic and political transformation we have been talking about.

What then are some of the critical issues and problems facing adult and non-formal education? Below we cite just a few issues which need to be addressed by all concerned, policy makers, administrators as well as practitioners in the field.

Resources. Perhaps the greatest problem facing the adult and non-formal education sector is lack of adequate resources, physical manpower as well as financial.

Adult and non-formal education programmes can be expanded considerably through a reorganization of the school calendar and a more judicious use of existing facilities - government and non-government. If all education institutions were to open their facilities for use by the community for literacy, basic education, skills training and correspondence courses, we would go a long way towards resolving this problem.

Manpower shortage in the non-formal sector is more critical than in the formal sector. It is for this reason that part-time workers should be used as well as volunteers and cadres in other fields. Thus, the expertise in agriculture, health, nutrition, child and family care and trade unionism is not found in education but nevertheless ought to be used so that these people become more effective agents for change.

Adult and non-formal education programmes have always received very little funding especially by the government. At least 10% of the education budget ought to be put towards adult and non-formal programmes, otherwise it is argued we are not really serious about this vital area of education. Those of us working in adult and non-formal education should in fact be regarded as allies of the Ministries of Finance for, in the long run, we save them money.

Clientele: It is important for us to have a clear profile of the learners in adult and non-formal programmes. They could be adults or children. More often than not they are unemployed and their level of educational attainment is low. They are socially and economically disadvantaged and therefore have low self esteem. Since they attend classes voluntarily they will only continue classes if their interest is maintained and they see the relevance of what they are learning. Unless there is proper support and empathy with such learners, the particular programme is likely to fold up.

Training: Whilst the professional and academic training of tutors and teachers working in adult and non-formal education programmes is important, an equally serious element is probably proper orientation. Because of this all personnel, officers,

tutors, and administrators should undergo crash in-service orientation programmes. As far as teacher trainees are concerned, they should undergo a compulsory course in all aspects of adult and non-formal education so that they, as teachers, become agents of change and are prepared to work outside working hours and outside classrooms.

Coordination: The general coordination of adult and non-formal education programmes has always been a serious problem. It is, of course, in the nature of adult and non-formal education programmes to be organized and conducted by various agencies and organizations, government and non-government. For example, in literacy programmes, the main thrust may well come from Governments but private, non-government and other organizations render assistance in terms of writing material and mounting literacy classes. However, presently there appears to be little effective liaison, consultation and coordination between the various agencies and government departments.

Under the circumstances, different agencies could well be duplicating efforts and so wasting scarce resources. They could even be pursuing their own goals and objectives independently of each other, and perhaps even in apparent contradiction to government efforts. In developing countries like ours we cannot afford to allow this state of affairs to persist, for both economic and political reasons. The issue of attempting to set some machinery that will assist in coordinating the various adult and non-formal programmes therefore needs to be addressed.

Negative Attitudes: Adult and non-formal educational programmes are often looked upon by both participant and provider as second rate - as the next best thing to formal education. Parents send their children to non-formal classes when circumstances have made it impossible for them to attend school. The learners and teachers themselves would, understandably, prefer to be in the formal system. The policy makers and education officers feel that the programmes are peripheral and cannot be as important as mainstream education, so they give scant time, attention and resources to adult and non-formal education.

To some extent this is to be expected because, after all, we ourselves are products of the formal education system. And yet we need to somehow reverse this trend. Perhaps for a start we should provide policy makers and personnel working in this area the necessary information about non-formal education programmes, how they are administered and financed, who the clientele are, etc., and by so doing make them aware of the importance of such programmes in the nation-building process.

EDUCATIONAL RADIO: A CONCEPTUAL FRAMEWORK

Philip R. Christensen
Academy for Educational Development

There is a well-known story from the New England region of the United States, where I was born. A tourist stops his car to ask a local farmer how to get to East Millinunket. "Let's see," says the farmer. "Just keep going down this road until you get to the Interstate Highway. Get on the highway going north, and take the first exit you reach. Go east on that road for about 20 miles and..."

The farmer pauses to think, and tries again. "Come to think of it, you'd best drive on by the Interstate 'til you hit Route 1. That's the scenic route that goes right up the coast. Take Route 1 north to the next town. At the third...no, the fourth...traffic light, turn left. Then you go for about three miles until you..."

This time the pause is longer. "Better still, turn around and go back the way you came. Drive about 10 miles until you come to a crossroads. You'll see a big oak tree on your left and a red barn on your right. Turn right, and go for another 5 miles 'til the road comes into dirt. Just keep going, and pretty soon you'll..."

After still another, very long pause, the farmer scratches his head, takes a long pull on his pipe, and sighs, "East Millinunket, eh? Come to think of it, you can't get there from here."

In this presentation I would like to suggest a new vision of the problems behind and possible solutions to Africa's educational challenges, and to specify radio's place in that vision. I would like to explore two questions relevant to this conference's theme: where do we want to go with education in Africa, and how can radio help us get there? And I would like to work from the assumption that we can get there from here.

In particular, my remarks will address three areas:

- o the need for new approaches to improving education in Africa, and what we know about the available alternatives,
- o the strengths and weaknesses of radio as one alternative means of reaching our goals, and
- o a framework for understanding different models of educational radio.

The Need for New Approaches to Providing Education for All

The late Kwame Nkrumah of Ghana liked to say that every African child's real birthright of independence is a basic education. Many have repeated this hope. For example, a 1982 conference of African Ministers of Education in Harare specified the first priority need facing the continent as "...the democratization and renovation of education to enable all African children and adults of both sexes to exercise fully their right to education."

How well have we succeeded in providing African children, and adults, with this birthright? The good news is that access to education has been improving, especially at the primary level.

Between 1960 and 1985, enrollment rates for children in Africa went from 32.7% to 65.9%. However, we still face significant problems with providing education for all. Access to the primary level is more extensive than to the secondary and tertiary levels. As many as 28 million primary-school-age pupils are not in school, half of those because they could not find places. At the secondary level, the figure is 69 million children, or 64% of the potential secondary enrollment. The number of adult illiterates rose in the 1970s alone from 139 to 156 million.

And that's the good news. The bad news starts with the decline in per-pupil resources. Even where the percentage of Gross National Product devoted to education is stable or rising (a figure that has been 20% or higher in some countries), per pupil expenditures are falling. The average expenditures per pupil in low-income countries declined from \$109 in 1970 to \$75 in 1980, as expressed in constant U. S. dollars. This decline is a function of competing priorities and of increasing school populations due to national population growth and greater access.

We also face the problem of deteriorating quality. Scores on external examinations are falling in many countries. Governments and businesses are increasingly dissatisfied with the match between graduates' skills and the needs of the community or the workplace. Leaders voice worries about the negative impact of schooling on values and character, the "hidden curriculum."

Perhaps even more dangerous than these challenges are the conclusions that many in Africa and elsewhere in the world are beginning to draw from them. One example is the presumption that quality is for the elite, that the masses can never have high standards in their education. Taking this reasoning even further, some now suggest that universal primary education is neither feasible nor desirable in Africa. Another example is the belief that Africa's destiny is always to be the world's "poor cousin," that this continent and its professionals are incapable of matching the educational systems in the "developed" world because of endemic economic or intellectual poverty.

These reactions, quite possibly based on deep-seated racial or national prejudices, are counterproductive. If there is no hope, there is no point in trying. Yet the real source of the problems facing education in Africa may not be that we cannot succeed, but that we cannot succeed merely by copying models from elsewhere in the world. We need to develop new solutions to the challenges facing Africa, and, to a large extent, we must develop these solutions here on this continent.

As New Englanders enjoy anecdotes about wry farmers, Iranians enjoy stories about figures such as Kat Khoda, a somewhat simple-minded village leader. One day a man painting his roof found that he had worked backwards, and was trapped at the top by the wet paint all around him. The villagers called Kat Khoda. In an instant he grasped the problem and began to issue commands. The leader ordered two ropes and threw them up to the man on the roof, instructing him to tie them around his waist. Two strong fellows on the ground took the other ends. At Kat Khoda's bidding, on the count of three the men on the ground pulled on the ropes. The poor man on the roof fell to the ground and broke his neck. A puzzled Kat Khoda scratched his head and mumbled, "I don't understand. It worked so well last week when he fell into the well."

Kat Khoda failed because he tried to use an old solution with a new problem. If we are to avoid the same trap in our educational planning, we must reexamine our assumptions about three key questions:

- o Why should we teach? For example, is our goal to have students pass a national examination, or is it to promote personal and national development? The two objectives are not at all synonymous, and may even be contradictory.
- o What should we teach? For example, should we teach students to pass an exam on arithmetic sums, or should we teach them to make correct change? Do we teach them to calculate the area of a rectangle at the blackboard, or to determine how much seed is needed to plant a certain plot of land?
- o How should we teach? What instructional tools should we use--radio, textbooks, teacher training, or something else?

This final question is the focus of the African Conference on Radio Education.

Radio as One Alternative

Several recent studies have reviewed what is known about the effectiveness of various instructional delivery alternatives. One of the best is by Lockheed and Hanusheck ("Improving Educational Efficiency in Developing Countries: What Do We Know?," Compare, 18:1, 1988, pp. 21-38). These authors note that most interventions have a positive impact, but that their per-student costs vary widely (from \$561 for lower-secondary agriculture training in Tanzania to \$.25 for textbooks in Thailand). Generally, the most cost-effective investments are in textbooks, radio, cross-age peer tutoring and cooperative learning. Teacher education and vocational-technical training in secondary schools are less cost-effective.

To illustrate their conclusions, Lockheed and Hanusheck point to Brazil, where textbooks were shown to be more than twice as cost-effective as primary teacher training, four times as cost-effective as in-service teacher training, and seven times as cost-effective as secondary teacher training. A study in Thailand showed textbooks to be nearly five times as cost-effective as each semester of post-secondary teacher education. Research in Nicaragua showed radio to be half again as cost-effective as textbooks.

It is clear, therefore, that more attention should be given to the use of textbooks and radio for instructional delivery. Another author, Bruce Fuller (Raising School Quality in Developing Countries, The World Bank, 1988), argues that we should also reduce investments in elements of schooling not related to achievement. As examples of such relatively poor investments, he mentions reduced class sizes, laboratories in secondary classrooms, and the paper credentials and salary levels of teachers.

Although there exist isolated examples of the use of two-way radio for education (such as the well-known outback schools in Australia that link students and teacher by radio transceivers), it is broadcast radio that has achieved the impressive cost-effectiveness documented in studies such as those just cited. The use of radio broadcasts for education in Africa goes back to the early 1930's, to the once-popular spelling bees, the "Your Radio Doctor" programmes and the early school broadcasts. Today almost all countries on the continent make some use of radio in support of formal or non-formal education, and many use the medium to serve schools.

Radio offers three main strengths as an instructional delivery alternative: access, quality and efficiency. First, it promises improved access to education for learners. Radio goes anywhere. It can serve large numbers of students and teachers almost as easily as small numbers. Radio does not discriminate.

A radio programme does not respond differently to a different skin colour, the "wrong" tribal background, a physical peculiarity or a tattered school uniform.

Second, radio promotes high-quality instruction. Its very nature requires experts to design instruction in advance using a systematic process, and supports consistent implementation of such instruction. Good educational radio gives teachers and students the best available models for content and pedagogy. Well-crafted radio programmes can motivate and engage students and teachers.

Third, radio can increase the efficiency of an educational system. Once programmes have been developed, the operational costs of broadcasting them are low. When radio serves large numbers of pupils, it spreads costs across so many learners that the per-student expenditures are low, too. Finally, radio permits more efficient use of available classroom time, itself a scarce resource. The medium promotes careful instructional planning and maximizes time-on-task.

Of course, there is no such thing as a perfect instructional delivery mechanism. Three main weaknesses balance radio's strengths: dependence on technology, high front-end costs and its lack of individualization.

Radio is a technology. By definition, therefore, educational radio is technology-dependent. The best possible programming cannot serve learners unless there is access to studio and transmission facilities, working receivers and power (via mains supplies or batteries); unless broadcasting services make enough air time available; unless reception is adequate.

Although instructional radio programmes are relatively inexpensive to broadcast, they are quite expensive to develop when the costs of the necessary technology are added to the staff required. In Kenya, for example, the development of 585 half-hour Interactive Radio Instruction English lessons required 226 professional person-hours per hour of final programming.

A third weakness of broadcast radio for delivering instruction is its one-way, centralized nature. Since there is no way for those in the studio to perceive the impact of their instruction, there is no way for them to individualize that instruction, to take into account the particular circumstances of individual students or classrooms. Well-designed instructional radio systems can compensate for this problem to some extent, but they cannot eliminate it without help in the classroom from a teacher or paraprofessional. Poorly designed radio programming runs not only the risk of leaving some students behind, but also of discouraging individual creativity and innovation.

A Conceptual Framework for Instructional Radio Models

In fifty years of experience with educational radio in Africa, to say nothing of experience elsewhere in the world, experts have developed many approaches to best using the medium. The most effective of these seek to capitalize on radio's potential strengths while avoiding or minimizing its weaknesses. How can we make sense of this diversity?

One way is to categorize each model on two dimensions. First, is it designed primarily to serve in-school or out-of-school learners? (This is similar to the formal/non-formal continuum, but provides a clearer distinction in practice.) Second, is it primarily supplementary to the established curriculum, or does it attempt to provide core instruction that covers virtually the entire syllabus via radio?

The following table shows how a few instructional radio models could be placed in this framework:

Instructional Radio Models		
	<u>Supplementary</u>	<u>Core</u>
<u>In-School</u>	Schools Broadcasting	Interactive Radio
<u>Out-of-School</u>	Development Campaigns Community-Based Radio	Distance Education

Schools broadcasts are perhaps the best-known examples of instructional radio in Africa. Many countries publish annual schedules of radio programmes for schools. Some, such as Kenya, devote substantial air time to this purpose during the school year. Schools broadcasts are aimed, of course, at children in schools. They are supplementary in nature. No attempt is made to cover the entire syllabus. Instead, one or two new lessons are broadcast each week for a given subject area and grade level. These enrich and reinforce the primary instruction, which is delivered by other means (generally through the teacher and textbooks). In this sense, schools broadcasts work like teaching aids such as wall charts. The teacher uses them to help cover certain objectives or units of the curriculum.

Such an approach offers two main strengths. It can focus on areas of greatest need. Instructional radio planners often begin their work by meeting with teachers and subject specialists to determine what parts of the curriculum are most difficult to teach, then design radio programmes to support those areas. Schools broadcasts also can cover many subject areas without excessive demands on limited air time, since each subject and grade level may require only 15 or 30 minutes per week.

Of course, the corollary to these strengths is that schools broadcasts, by their very nature, can offer only limited help to teachers. If a teacher needs assistance with a different part of the syllabus, she must turn elsewhere. This makes the instructional system more teacher-dependent. Furthermore, because people sometimes perceive "supplementary" as "unessential," schools broadcasts may be seen as unimportant and, therefore, not used. Finally, schools broadcasts are not always linked closely to the curriculum, particularly when they are produced in isolation from a national curriculum development centre. In such cases, teachers may not find the lessons useful and curriculum developers may ignore, or even resent, them.

For out-of-school learners, development campaigns provide one example of supplementary radio. Such campaigns focus on a particular theme (for example, "raising healthy children") and generally on specific messages (for example, "use oral rehydration salts properly"). They can comprise social marketing spots, using short advertisements to promote new ideas and attitudes, or informational programming, devoting an entire show to one or more development issues.

Radio development campaigns have achieved notable success throughout the developing world, particularly in the health and agricultural sectors. Such campaigns can reach large numbers of people with critical messages, yet they do not require an extensive infrastructure to prepare or broadcast their messages. On the other hand, audiences tend to be ephemeral, and the attention of those who do listen can fade in and out. Also, such programming often is based on loose planning or evaluation, following the mistaken assumption that "non-formal" means "not systematic."

Community-based radio is a very different example of supplementary, out-of-school educational radio. Generally sponsored by non-governmental organizations, such as the highly successful group of local stations in Latin America and Africa sponsored by the Baha'i Faith, and occasionally funded by governments, such as the USAID-supported Liberia Rural Communications Network, these stations are entirely devoted to community development. Rather than airing occasional spots or programmes on a service that is primarily dedicated to other purposes, community radio gives a local or regional community full control over its own radio station. The voices heard are the voices of the community's people. The music is their music. The news is about their problems and successes. The development messages can meet their particular challenges.

Because this approach fosters a sense of ownership, community radio creates strong audience loyalty. It usually requires relatively small capital investments and operating budgets, since the stations need only modest equipment and much

of the staff can be volunteers. However, by definition this type of radio reaches smaller audiences on a local or regional, not a national, level. Also, because the community sets its own programming priorities, messages may be less focused on centralized development objectives.

Turning to instructional radio models that attempt to cover the entire core curriculum, the best-known one aimed at students in schools is Interactive Radio Instruction (IRI). This methodology has been used throughout the world to teach mathematics, languages, science and health. IRI is highly participatory. Careful script-writing creates the illusion that the children are interacting with the radio teachers, responding several times a minute in a variety of ways. Systematic instructional design techniques maximize learning, retention and motivation. An unusual formative evaluation approach makes feasible developing as many as 200 valid lessons a year. This, in turn, makes it possible to cover virtually the entire syllabus with two to five lessons per week throughout the school year. If schools broadcasts are like radio wall charts, IRI programmes are a radio textbook, on hand every day to help the teacher.

IRI has been proven successful many times over. It was the first Interactive Radio Instruction series, for example, that Lockheed and Hanusheck found to be even more effective than textbooks in Nicaragua. Effects size analysis shows that IRI in the developing world has produced achievement gains comparable to computer-aided learning in the United States. Since IRI can help with the entire curriculum, it is less teacher-dependent than schools broadcasts. The method is motivating and enjoyable; teachers and students appreciate it and support it.

Among the problems with Interactive Radio Instruction is that it costs much more per subject than schools broadcasts, simply because so many more hours of programming must be developed. In Kenya, for example, children using an IRI English series received 25 times as much radio instruction as pupils using the conventional English schools broadcasts. Besides the staffing costs associated with this extra time, there is the added demand on air time. Another problem is that IRI's intensive use of the medium makes it more dependent on technology. If a receiver or a transmitter fails for a month, students probably would miss only four or five schools broadcasts. Since these are supplementary, the learners are not likely to suffer greatly. If a month of IRI lessons were not broadcast, however, pupils would miss more than 20 lessons and a significant portion of the syllabus, requiring their teacher to compensate in some fashion. Finally, there are some types of instructional objectives that radio cannot teach efficiently, such as those in the psycho-motor domain and those which require substantial time for student practice. In the Kenya English series, for example, IRI could make only a limited contribution to helping teach writing skills.

Radio also can be used outside of schools to cover an important curriculum. The medium is already recognized as an important component of distance education models such as the United Kingdom's Open University and "schools of the air" in countries such as Malawi. Interactive Radio Instruction also has been used for such audiences. At the tertiary level, an IRI programme in Nepal helped to upgrade teachers. At the primary level, the RADECO Project in the Dominican Republic continues to teach the basic curriculum to children in remote areas who do not have access to regular schools.

Successful distance education models generally combine several delivery mechanisms, including radio (or television), correspondence, textbooks and occasional face-to-face meetings. Their primary advantage is increased access to education. Also, they tend to have lower per-student costs than conventional, in-school instruction. On the other hand, it is difficult to cover all subjects in this manner. Material which is very technical, or which requires a high degree of individualization, can be more easily taught face to face. Another problem is that education systems tend to be biased in favour of conventional instruction, so that distance education programmes do not always receive the minimum resources necessary to succeed.

There are, of course, other instructional radio models which we could add to this paradigm. For instance, radio can support non-formal literacy campaigns. In this approach, the medium helps community-based literacy groups working with printed materials and a local animator. This, therefore, is a supplementary, out-of-school use of educational radio. The examples already cited, however, should be sufficient to illustrate how one can use the conceptual framework proposed here to contrast the strengths and weaknesses of various applications of instructional radio.

Conclusion

In spite of daunting challenges facing every country on the continent, the goal of quality education for all Africans is not out of reach. We can get there from here. However, we almost certainly cannot get there by following the old routes. If we want to attain this goal, we must do so by new means.

Research conclusively proves that instructional radio is one practicable alternative. Of course there are no panaceas in the real world. Radio is not a perfect solution to every problem facing education in Africa. Unquestionably, however, it offers great potential for improving access and raising standards. New models of educational radio, such as Interactive Radio Instruction, are capitalizing on the medium's strengths while compensating for some of its weaknesses.

Unfortunately, radio's potential in service to education remains largely untapped. For those of us committed to Nkrumah's vision of a basic education for every African child, for every human being in Africa, surely it is time to break the shackles of old assumptions, outdated objectives and conventional means. It is time to try new approaches and new solutions. It is time to give radio a chance.

**TEACHING BY RADIO
AT THE DEPARTMENT OF
NON-FORMAL EDUCATION - BOTSWANA**

D. Kelebonye, Radio Producer,
Non-Formal Education Division,
Ministry of Education

1. INTRODUCTION

Botswana Extension College was established in 1973 and offered courses at Junior and Senior Secondary levels through distance teaching using print, radio and face-to-face media. The programme was aimed at teaching a wide range of subjects including subjects that did not lead to examinations.

The aims of the college were: -

- (a) To develop courses at Secondary level for distance learning.
- (b) To help relate distance learning to educational needs regarding Botswana's programmes of rural development. Botswana Extension College was used by the Government to expand the availability of Secondary level education in the country.

Out of Botswana Extension College was born the Department of Non-Formal Education (DNFE) in October 1978. It occupied its new and permanent premises in 1979. The programmes under the DNFE are Distance Education, National Literacy Programme and Home Economics.

2. THE NATIONAL LITERACY PROGRAMME (NLP)

The National Literacy Programme was launched in 1980 as one of the major operations of the Department on Non-Formal Education. The main objectives as conceived then were: --

- o to eradicate illiteracy to enable an estimated population of 250,000 (40% of 15 - 45 year ago group) to become literate in Setswana and numerate within a period of 5 years; i.e. 1980 - 1985;
- o to enable the NLP participants to apply knowledge gained in developing their cultural, social and economic life;

- o to enable participants to perform community duties on the one-hand and to exercise the rights and obligations of citizenship on the other;
- o to enable participants to develop nationalistic, self-reliant and democratic concepts of work and life;
- o to cultivate self-development by the participants and to help them continue to develop abilities and attitudes which would enable them to contribute constructively to society.

The programme was conceived as a development project with a life span of five years. However, experience from the summative evaluation of the project clearly demonstrated that adult literacy should be viewed as a long-term activity, just like other educational interventions.

Since the programme started in 1981, it has experienced a remarkable achievement in terms of enrollments even though the programme has not achieved its objective of eradicating illiteracy. Presently the programme runs literacy classes for about 40,000 learners registered in about 3,000 groups across the country. These learners are taught by volunteers who are paid a honorarium of P2.00 (U.S. \$1) per session.

A number of smaller programmes and activities are being carried out under the NLP and as part of its development for post literacy purposes. These include:

- (a) the Home Economics programme, which as been merged under the post literacy income generating projects. Efforts continue to be made to link the National Literacy Programme with functional skills and income generating activities and projects. This idea has come of age now and there seems to be no need to continue justifying the need for initiating these projects. Even the evaluation report calls for the establishment of a position of Project Officer. In addition to income generating this programme offers courses on skills leading to household, child care, nutrition and personal development.
- (b) Village Reading Rooms.
- (c) Materials Development.
- (d) English as a Second Language (although not yet formally launched).

2.1 USE OF RADIO IN NLP

The radio in this programme is used to disseminate information of activities, plans and current affairs related to the programme. Radio is not actually used to teach or give instruction as is done in the Distance Education Programme. The main method of instruction in the NLP is the face-to-face method carried out by literacy group leaders (volunteers) in the villages. The methods used to disseminate information differ according to the nature of information to be given. They include interviews, drama, folk media, spot announcements, etc.

3. RADIO IN DISTANCE EDUCATION

The JC radio programme started in the 1970s, soon after the establishment of Botswana Extension College (BEC). Radio at this level is a medium of instruction. The DNFE uses what is known as the three-way teaching method of print, radio and face-to-face instruction to reach students who study by the distance education method, whenever they are in Botswana. Print is the main medium while radio and face-to-face methodologies are supplementary media. Radio is used in teaching the following subjects:-

- Bookkeeping and Commerce
- English
- History
- Human and Social Biology
- Geography
- Mathematics
- Setswana

Students are also counselled through the radio.

3.1 PROBLEMS

We have experienced the following problems in teaching by radio.

3.2 RECEPTION

There are still parts of Botswana where reception is very poor. In such places students do not benefit from the radio lessons as they cannot raise the Radio Botswana signal.

3.3 OWNERSHIP

There are students who have no access to radios even though many households have radios. Another problem related to ownership, especially in rural areas is that some of those who possess radios often run out of batteries, and thus do not benefit from the lessons.

3.4 BROADCAST SCHEDULES

Some of the students have complained about the broadcast schedules. The lessons are broadcast on Wednesday mornings at 6.10 and repeated on Friday evening at 20.00 hours. These times are not suitable to some. Botswana has only one central radio station and, as a result, not every programme receives a suitable time slot for its target audience. This is one of the problems raised by the Radio Listenership Survey Report of 1988.

4. CONCLUSION

Disseminating information or teaching by radio reaches people in the shortest possible time but, with the problems that we experience, there will still be people who will not benefit from educational radio. However, the Government is doing its best to improve the situation.

THE STATUS OF EDUCATIONAL BROADCASTING IN CAMEROON

Dr. T.M. Tchombe
Inspectorate of Pedagogy for Secondary Education
Ministry of National Education
Yaounde, Cameroon

ABSTRACT

The main thrust of educational broadcasting in Cameroon is limited to non-formal or popular education with such objectives as helping the masses to understand government policies, to learn the elemental techniques of health, hygiene and agriculture and to understand and appreciate issues related to politics and social behaviors.

The use of radio in Cameroon for formal education has had a rather short history. It was introduced in the early years (1960s) of re-unification of former British Trusteeship of Southern Cameroon and the newly independent French Cameroon, to promote bilingualism in English and French.

With the current increase in the demand for formal education and given Cameroon's commitment to the idea of "education for all," radio seems to provide a readily available and affordable instrument for meeting basic learning needs of the masses, other than the traditional classroom-teacher-talk-chalk learning situations.

I. INTRODUCTION

It is perhaps pertinent to give a brief historical account of the political evolution of Cameroon and to present its essential characteristics as a prelude to discussing the status of educational broadcasting in the country. Such background information seems indispensable for a thorough understanding and appreciation of the variables that affect and condition the problems and issues related to national life and development. Cameroon's experience is, in fact, unique and is nowhere replicated on the African Continent.

Historically, Cameroon is an amalgamation of two territories, formerly constituting a single German Colony but later split into two by the United Nations (UN) as trusteeships administered by France and Britain after the defeat of the Germans in the Second World War. Because of its proximity to Nigeria, British Cameroons, itself two discontinuous territories known as British Southern Cameroon and British Northern Cameroon, was administered by Britain as part of the Federation of Nigeria with the Headquarters in Lagos.

After attainment of political independence by French Cameroon on 1st January 1960 (known thereafter as Republic of Cameroon) and the Federation of Nigeria on 1st October 1960, the political fate of British Cameroons became rather uncertain since in the opinion of the UN the territory was not sufficiently viable to stand as an independent State. This uncertainty was however later resolved in a UN-controlled plebiscite held on 1st October 1961 in which the people of British Cameroons were asked to decide for political integration with either the Federation of Nigeria or the Republic of Cameroon. British Northern Cameroon chose to stay with Nigeria. British Southern Cameroon, on the other hand, opted for re-unification with the Republic of Cameroon, thus giving birth to the Federal Republic of Cameroon with two federated States of West Cameroon (formerly British Southern Cameroon, English-speaking with Headquarters at Buea on the foot of Mount Cameroon, constituting about one-fifth of the country both geographically and demographically), and East Cameroon (formerly Republic of Cameroon, much larger than West Cameroon, French-speaking with Yaounde serving as Headquarters and also as capital of the Federation). As should be expected, the union of West Cameroon and East Cameroon ushered in official bilingualism in English and French.

Subsequently, by a referendum held in 1972, the federal structure was abolished and a unitary system of government instituted, thereby necessitating a change in the name of the country from Federal Republic of Cameroon to United Republic of Cameroon. In 1985, following a parliamentary approval, a presidential decree rechristened the country simply as Republic of Cameroon.

Present-day Cameroon has a surface area of 475,442 square kilometers with a total population of about ten million inhabitants. This population is unevenly distributed on the national territory. Population density stands roughly as follows:

- o About 75 persons per square km. in the northern grassland, or savanna zone.
- o About 41 persons per square km. in the coastal regions.
- o About 5 persons per square km. in forest areas in the south and east.

Ethnographers estimate that there are about 230 ethnic groups in Cameroon, speaking more than 200 different and distinct indigenous languages. This super abundance of languages is most marked in the South of the country, a phenomenon described by the late Professor Bernard FONLON, a Cameroonian scholar, as "the African confusion of tongues."

"Moslem North and Christian South" is a stereotypical description that applies to Cameroon as well as many other African countries, although it must be clarified that Islam is practiced in the South and Christianity in the North of the country. Amidst these two religious practices, one also finds animists who worship in conformity with their traditional beliefs.

It is in the context of this background that problems specific to the development of educational broadcasting in Cameroon can be critically analyzed with a view to identifying appropriate strategies for providing workable and realistic solutions.

II. THE RATIONALE FOR EDUCATIONAL BROADCASTING

As a normal feature of everyday life with its enormous potential as an educational instrument, particularly in developing countries, radio unquestionably plays an important role in transmitting knowledge. Given its ubiquitous nature and ready accessibility, it has the elasticity of reaching out to almost an entire population with all kinds of information. It is in this context that its value for extension schooling or distance learning is orchestrated. Educational broadcasting in its broadest concept ensures learnable materials for the listener, whereas school broadcasting limits such broadcasts to what is to be learnt in formal schooling. With the radio therefore, the dream of education for all is increasingly becoming a practical reality, and this medium has been successfully and efficiently harnessed for both formal and non-formal, or popular educational purposes in many parts of the world.

Today in practically every developing country, there are more transistor radios than classrooms. Most homes own at least one and the members of these homes listen to them. Who listens to what, when and with what effects are still subjects of armchair theorizing. Nevertheless, the radio offers a ready medium for educating more people than could possibly be achieved by any conventional classroom. In the domain of non-formal education, educational broadcasting can, and does, provide an excellent avenue for creating awareness and highlighting needs, such as helping the masses to understand government policies and to learn the elemental techniques of health and hygiene. Further, it can promote a sense of national consciousness by motivating joint action around clearly defined common goals. The kinds of information generally presented here are thematic in nature and mostly geared towards either eliciting appropriate responses, modifying attitudes and behaviours, or enriching already acquired experiences.

With regard to formal education, on the other hand, educational broadcasting has been used as a vital component in complementing, supplementing and enriching classroom instructional or learning experiences. This direct intervention by radio in the teaching-learning process, known in some countries as school broadcasting, aims at teaching lessons for specific syllabus topics throughout the country at the same time. The impact of educational broadcasting on formal education can be observed from many dimensions. It may not only improve on the teaching-learning process, but also help the growth of critical appreciation in pupils. In addition, developing skills in selective listening with discriminating attitude, may enable pupils to grow in sensibility, a useful skill for later life. Furthermore, radio has the power to bring many more voices in the classroom than a single teacher can, and to provide international variety necessary for voice quality in communication. Such a system, if fully exploited, would not only kindle interest but also sustain a high level of motivation, so crucial in enhancing learning achievement.

III. THE NEED FOR EDUCATIONAL BROADCASTING IN CAMEROON

The enormous growth in the demand for education since independence and reunification in Cameroon, as has been the case in other developing countries, has forced us to take a fresh look at literacy problems as a factor of underdevelopment. Although the government is trying to meet these needs by increasing the availability of educational facilities in the form of schools, the probability of providing formal education for all cannot be feasible. The educational budget is hardly increasing in real terms, even though the resilience of public expenditure on education is apparent. The demand for education increases almost at a geometric rate and is inversely related to the capacity of Government to meet this demand.

Cameroon has the following age spread percentage:

- o 55% under 20 years of age;
- o 39% between 20 and 60 years of age;
- o 6% over 60 years;

The country's active population is estimated to be 54%. It is of interest to state here that 98% of Cameroon's geographical space is used for agriculture, forestry and other related activities. About 80% of the people are engaged in agriculture, thus living and working in predominantly rural communities. Rural exodus thus becomes a common feature for which one of the main reasons is the search for formal schooling. Given the diversity of its ecology, climate and socio-cultural values, some rural children may not have access to formal schooling. In some areas one village may serve as a catchment area for providing schooling for children from neighboring villages. Thus the phenomenon of rural/urban and rural/rural exodus is largely responsible for the overcrowding of classrooms in most of our towns and many of our villages.

An examination of school enrollment at different levels of this school system is presented here merely to throw light on what exists - a premise to judge Teacher/Pupil (TP) ratio

School Enrollment at All Levels of Education

LEVEL	SCHOOL YEAR	
	1986/1987	1987/1988
Nursery	83,960	88,127
Primary Education	1,795,254	1,875,221
Secondary General	291,842	317,766
Secondary Technical	90,666	93,651
Teacher Training	4,259	5,347
Post Secondary	9,111	8,931

As observed there is a steady increase in school enrollment at different levels of our educational system in particular at the primary level. The 1974/1975 Statistical Year Book on Education stated that Cameroon had the highest percentage (90%) of primary school enrollment in Africa. However, by the age of ten to eleven years, over 40% of the children who started school at six have given up schooling or attending irregularly. This rather high drop-out rate constitutes a regular feature of the school system, which Globe and Porter (1977) refer to as a serious defect. The teacher-pupil ratio varies from 1:55 to 1:100. With this exceedingly high ratio, teaching effectiveness and quality are bound to be compromised.

Thus traditional approaches (chalk, blackboard and talk) require some support as there are clear signs of a growing incapacity of the school system to cope with the increasing quest for formal education. We need alternative solutions. The cost-benefit analysis of such solutions must be carefully worked out in order to ensure positive outcomes in both short and long run terms.

The problem in Cameroon is not only the increased demand for formal education but also for a bilingualism unique to Cameroon, which became a pressing need at independence and reunification. A country with linguistic diversity (more than 200 languages), has to cope with two foreign languages, French and English rooted

in two dominant European cultures. Simple bilingualism involves a situation in which, in addition to the mother tongue such as English, one has to learn French. For Cameroon, bilingualism means an anglophone with one or two mother tongues plus English as a first foreign language has to learn French as a second foreign language. The same acknowledged pattern is applicable to francophones. Competence in the use of these two official languages has therefore been an acknowledged educational imperative (in the country) whose realization depends in no small measure on the school system.

A word here in connection with the use of indigenous languages for education in general and for educational broadcasting in particular seems relevant. As already indicated, there are about 200 languages in Cameroon, an ethno-linguistic situation that presents a number of imponderables with regard to the use of the mother tongue as a medium of instruction. Firstly, the multiplicity of languages with associated dialects poses the problem of criteria of selection. Secondly, many, if not most, of the languages do not possess sufficiently large geographical coverage that should allow them to serve as dominant regional media of communication; any attempt to impose one language over the speakers of other languages may create inter-tribal animosity.

Despite the above difficulties that plague the use of the indigenous languages for formal education, the Government is aware of the pedagogical value inherent in the use of the child's mother tongue for teaching and learning.

On-going research studies organized by the Institute of Human Sciences, Yaounde, have identified five relatively dominant local languages as possible vehicles for the formal transmission of the educationally-related skills of reading, writing and arithmetic. The results of these experimental studies are still awaited. For now, and as a matter of government policy, French and English are the exclusive media for formal education and are also relied upon, to a certain extent, for non-formal education.

IV. THE PAST AND PRESENT IN EDUCATIONAL BROADCASTING IN CAMEROON

Cameroon, no doubt, has been aware of the special properties and potential of radio in promoting literacy education, in sensitizing the population to pertinent development issues, in facilitating the achievement of certain objectives of the school curricular, in particular its low cost for transmission and reception over a wide area, with no expectation of a literacy base for the listener. The radio broadcasting unit has always had a service for educational programmes in both English and French. The precise objective has always been to inform and educate, in particular children, youth and women. Attention is given to the masses and groups with diverse interests.

1. Formal Education

Bilingualism in Cameroon awakened a new interest in National Affairs having implications for National unity during the early years (1960s) of re-unification and independence. The potential of radio as a vehicle for propagating bilingualism was therefore exploited to reach a sizeable urban and rural population, both widely dispersed and isolated - the first real attempt at using Educational Broadcasting for direct teaching in then West Cameroon. The programme was styled "The African Dialogue." Classes were organized with a monitoring teacher, listening to the broadcast in a class. Similar attempts were made in the Francophone zone. These broadcasts were soon replaced by language courses offered at linguistic centers, which were set up to promote official bilingualism. The linguistic centers, which are still functioning, can in no way cater for all, as their distribution and coverage are extremely limited. Moreover, equipping the centers with human and material resources comparatively is more expensive than a radio class broadcast. What the radio does today by way of formal language teaching is a two minute programme broadcast each morning (Monday through Saturday) with the objective to improve spoken language. The programme is dubbed, "Mind your English" in English and "Parlez Clair" in French.

2. Non-Formal Education

It is in the area of non-formal or popular education that Educational Broadcasting in Cameroon has developed elaborate programmes with their emphasis on civic education and general consciousness raising among the populace. The programmes used here can be classified into two broad categories that are not necessarily mutually exclusive in terms of their general content and purpose. The significant difference between these two categories lies essentially in the amount of air time allocated for each programme within a given category.

The first category comprises programmes that have shorter broadcasting time, varying from 5 to 20 minutes. Two types of programmes make up this category:

i. "Micro-programmes" in English have their equivalent in French, known as "les Petites Emissions." These "feature programmes" discuss topical issues aimed at educating the public or any specific group. For example, in the programme "Teacher's Quarter Hour" attempts are made to educate teachers on current teaching techniques, classroom management and organization and also how to relate theoretical knowledge of child psychology to classroom practices. "Health Note Book" another feature of this programme, discusses issues on health such as children's diseases and curative measures, dieting and other such issues. The programmes run through the week from Monday to Saturday.

ii. "Spot Light," another feature programme, focuses on particular issues of concern to the Cameroonian society having, for example, moral and social implications. "Spot Light," in discussing topics such as teenage pregnancy, drug abuse and their consequences, attempts also to educate (and remind) the youths in particular and parents in general about what acceptable (and expected) social behaviours in Cameroonian society are. This feature programme is on for four days a week and the selection of the topics to be discussed is left to the discretion of the journalist handling the programme.

3. Main Programmes for Educational Broadcasting

In the second category of non-formal educational programmes the air time for each programme last for about 25 to 40 minutes, and each topic comes up once a week. The topics discussed treat issues related to the following areas:

i. "Health." Programmes through which health issues are discussed include major themes such as "Medical Hot Line," whereby experts and specialists in the medical field are invited to give talks on specific topics of concern to the public. Other related titles, including the French title such as "Sante pour tous, tous pour la Sante" are also features of health programmes. These programmes educate the population in disease prevention, including the rudimental knowledge of good health and hygiene.

ii. "News and Current Affairs" are presented through the programme "Your Window on the World" which is very informative and handles, for example, issues related to activities of the United Nations. Post secondary students preparing for various public service competitive examinations find the content of this broadcast useful. Issues on scientific inventions and developments in technology are discussed in the theme "What is New." (40 minutes)

iii. "You and the Law," which has the French title, "Le Verdict," is intended to sensitize the public to their individual rights, and has turned out to be very useful to university law students who use the information as a preparatory basis for their tutorials. Moreover, the university lecturer who presents this programme usually emphasizes the relevance of the broadcast, thus encouraging the students to tune in whenever it is on. (30 minutes)

iv. "At the Service of Each and Everyone," is a Police Programme (in French the programme is titled, "Au Service des tous et de Chacun") which educates not only the people on what should be expected of the Services of the Police but also educates the Police on professional ethics, law enforcement and crime prevention. (25 minutes)

v. "Helping you choose a Career" with the French title as "Une Ecole, un Metier, Un Avenir" is a counselling programme, presented by the School Orientation Service of the Ministry of National Education. The programme is directed generally to all students and in particular to school leavers, school drop-outs and parents. The content of the talks varies from career choice, hints on examination techniques, study skills, to name but a few; to the role of parents in preparing children for formal schooling. (30 minutes)

vi. "Road Safety," accident prevention broadcasting educates the drivers on the observation of highway code and other rules of conduct on the highway, for road safety. This programme is irregular as it comes on only at particular seasons during the year. Children are warned about the dangers of the road and educated about where and how to cross the road.

vii. "The Changing Rural and Agricultural World" broadcasts educate farmers on modern cultivation methods and the appropriate use of fertilizers, including the prevention of possible accidents due to misuse. Because of the population size involved, more than 70% of these broadcasts are often repeated in the local languages. (30 minutes)

viii. "Great Lives" discusses men and women of substance and their contributions to different aspects of development in the world. (30 minutes)

ix. "Conjuncture" is a French programme that discusses issues on economic crises and measures being taken to solve identifiable problems. (30 minutes)

x. "Culture and Society" broadcasts consist of documentaries on traditional issues of value for the preservation and exposition of Cameroonian culture. To enhance these programmes, local stations provide programmes in local languages; the content being local culture, traditional music, news and current affairs. Radio at this level educates and disseminates information that is useful to the rural world. There are other documentaries on great lives which discuss the lives of men and women of distinction the world over, including Cameroonians, and their contributions to development. (25 minutes)

xi. Programmes for women vary. There is the English Programme "Calling the Women" with French titles such as "Frequence Femme," and "Entre nous Mesdames"; all have the objective of educating the Cameroonian woman on family life, child-rearing, home management, her role in development and the activities of other women in the world. Recently family planning has become a prominent feature of this programme. (30 minutes)

xii. "Kids World," investigates children's views about parental roles and other aspects of interest to the growing child, which mothers have found valuable. Nursery stories have increased the popularity of this programme for the children. (30 minutes)

These examples of our educational broadcasting are recurring themes in local and national broadcasts for the education of the populace towards a more meaningful living. The implicit contributions of these programmes towards the lives of many are demonstrated through requests for re-broadcasts. This kind of feedback is indicative of the educational value of these programmes. Though as argued, most of the programmes are for civic education, they nevertheless provide information that continues to introduce Cameroonians to diversity of knowledge and experiences. In particular, educational broadcasting has played a major role in the current international fight against AIDS by stressing the central role of prevention.

V. THE POTENTIAL OF EDUCATIONAL BROADCASTING FOR CAMEROON

Research findings on the effectiveness of educational broadcasting in both non-formal education (for example, Tanzania, India, Cuba, Sierra Leone) and formal education (as in the cases of Mexico, Lesotho and Nicaragua) have been widely acclaimed (Mowlana and Wilson, 1988). A brief review of the methodologies employed in these projects with the corresponding results, indicates that they (the projects) could be replicated in Cameroon with some modifications, given the availability of adequate local resources. The Nicaraguan research Project on the use of educational broadcasting to improve primary Maths teaching as cited by Mowlana and Wilson (1988) is of particular interest here and deserves specific reference. Not only did the results of those pupils who participated in an hour a day radio programme show great improvement, reducing failure rate in Maths, but the skills and knowledge of the teachers improved as well. Thus it can be argued that besides its enrichment and supplementary perspective, educational broadcasting also provides an indirect in-service education for the teachers - a basis for continuous teacher growth and professional development.

The projects referred to above convey the assurance that radio is a worthwhile educating instrument with possibilities for the realistic presentation of formal knowledge. Because these radio-based educational projects represent a promising revolution in instructional methods, given their potential in reaching out to many, Cameroon could borrow the tested methods and use them as a point of departure to introducing educational broadcasting as an enriching element of the curriculum and a basis for striving to attain the ideal of education for all. Although the radio can be seen as a rather remote source for educating, without the persuasive impact of personal interaction from a teacher providing

feedback, nevertheless, pupils will be trained to listen intelligently, particularly when programmes presented suit the needs and interests of the learners. Pupils can be encouraged to listen to specific programmes at home, write up essential points, the best work mounted on a board and used for class discussions. Pupils' responses to the evocative powers of educational broadcasting can be inspiring to conscientious teachers.

However, the quality and value of radio broadcasting very much depend upon the content and form of the programmes on which it is based. When used to enrich or supplement curriculum material, radio may provide material resources beyond the teacher's reach, thus offering a superb educational advantage. In introducing or summing up a lesson, educational broadcasting may provide that piece of information not forthcoming from the sources available to the teacher or school. The radio is by no means being presented here as a usurper of the teacher's role. In fact, the teacher's capability in creating a rich learning environment, that is, optimally exploiting the possibilities for learning offered by all available resources, of course including the radio, to reach an increasing numerous and differentiated in-school and out-of-school population, is the instructional challenge of the moment. In this regard, teachers, especially in developing countries, would require professional training in instructional technology with special emphasis on the use of radio as a pedagogical tool.

In practical terms, we in Cameroon need a positive effort to link up educational broadcasting to formal schooling. To initiate this venture, certain issues must be resolved. Firstly, we would require precise information about the clientele, indicating the demographic distribution, also classifying areas of need. Secondly, the present programmes and the time-table for broadcasting would call for a re-scheduling and re-structuring in order that the programmes can come on during school sessions, or at times that would be appropriate for other out-of-school listeners. Thirdly, some specific topics of value to class teaching can be slotted in, either in the "Micro Programmes" or "Spot Light," at least once or twice a week for a considerable duration. Such steps would be a gradual move towards introducing broadcasting in the school system, the basic approach being selecting and linking of appropriate radio programmes with class work.

The promise presented by educational broadcasting in promoting formal education in Cameroon is great and can effectively be realized within the framework of well thought-out radio broadcasting policy. Such a policy must clearly specify the criteria for the design of the programmes to serve educational purposes and, more importantly, initiate and sustain positive action in the implementation of these programmes. It would also institute a system of regular evaluation and adaptation of the programmes.

Cameroon has adequate human resources and institutional facilities to operate an on-going educational broadcasting service. The Ministry of National Education is adequately staffed with competent professionals charged with the responsibilities of overseeing the effective implementation of curriculum content and the overall functioning of the schools. The efforts being made to extend such supervision to all schools in the country through pedagogic tours have not attained the expected amplitude because of limited financial resources to support the tours. Thus, if the qualified personnel of the Ministry of National Education can be mobilized and directed in collaboration with the educational service of the radio, educational broadcasting in Cameroon would greatly contribute to the improvement of the quality of school experience.

To conclude, it is almost a truism corroborated by research findings that educational broadcasting holds out a lot of hope for enhancing the process of human intellectual and social development in third world countries. For those countries not yet fully committed to educational broadcasting because of either inertia in making use of it or lack of knowledge of the techniques involved, it is hoped that full participation in this conference will stimulate interest in and motivate action toward the use of radio as a vital channel in fostering human learning.

BIBLIOGRAPHY

1. GOBLE N.M. and
PORTER J.F., The Changing Role of the Teacher, UNESCO,
NFER, 1977
2. HAVELOCK R.G. and
HUBERMAN A.M. Solving Educational Problems, UNESCO,
1977
3. MOWLANA H. and
WILSON L.J. Report and Paper on Mass Communication
Technology and Development, No. 101,
1988.

THE STATUS OF EDUCATIONAL BROADCASTING IN GHANA

A.G.O. Vandyck and J.W. Bennett
Ministry of Education

INTRODUCTION

For well over two decades radio has been extensively used by various ministries in Ghana as an effective means of disseminating information and instruction to targeted audiences of the ministries concerned.

The Ministries of Agriculture, Health and Education have been the chief patrons of Educational Broadcasting and have been using the radio to educate the Ghanaian public on issues of direct concern to them.

The Ministry of Agriculture, for instance, uses radio to educate farmers to improve their farming methods for greater yields. The Ministry hopes that it can effectively use this means to support its programmes in order to achieve its target of "Food For All by the Year 2000."

Similarly the Ministry of Health has various programmes that seek to educate the Ghanaian public to practice healthy habits in order to prevent diseases. Like the Ministry of Agriculture, the Ministry of Health aims at achieving "Health For All by the Year 2000." There have therefore been various programmes on health on radio for school, for mothers and for the public in general.

This paper will, however, deal with the use of radio by the Ministry of Education as an aid to formal education for pupils and teachers.

a. Objectives of Radio Schools Broadcast

- i. To direct specific programmes to pupils (and students) to build up their knowledge on specific school and related issues.
- ii. To transmit professional and academic information to teachers in order to upgrade their competence and to strengthen their knowledge and skills.
- iii. To keep teachers, wherever they are, abreast of new developments in education.

b. Number and Description of Courses

In the Basic Education sector the Schools Broadcast Unit of the Ghana Broadcasting Corporation provides 45 weekly slots of ten minutes' duration per slot, on Radio 1. These lessons are aimed at Junior Secondary level listeners in

various subject areas, which include English, Basic Science, Mathematics, Ghanaian Languages and Agriculture.

For the Senior Secondary and Teacher Training Colleges, Programmes are transmitted on Radio 2, with some 40 slots per week in the following subject areas: English, Literature in English, Science and Teaching Techniques.

On the whole, broadcast to schools and colleges is done 8 out of the 13-week term, every term. Thus, there is a total of 24 broadcasts to schools and colleges every year.

c. Role of the Programme

The programme is curriculum-based and is considered an aid to teachers in their classroom teaching. Broadcasts are meant to supplement teachers' efforts; they are not regarded as a substitute to the teacher. The teacher makes supplementary use of the programmes to enhance teaching and learning in the classroom.

d. Hours of Broadcasting per Week

At the basic education level, broadcast starts on Channel 1, from 9:10 a.m. and ends at 10:45 a.m. every morning.

At the secondary level, transmission also starts at 9:10 a.m. and ends at 10:45 a.m. on Channel 2.

e. Audience/Coverage

Transmission on Channel 1 is for Primary and Junior Secondary Schools. Channel 2 takes care of the Secondary Schools and Training Colleges.

f. Results of Evaluation

Evaluation done so far has been summative rather than formative. The following are the conclusions drawn for the evaluation done so far:

- i. The GBC is busily broadcasting away, with hardly any school listening;
- ii. With only one pre-set radio between the classes, precious broadcasting minutes are lost by classes as sets are carried from one class to the other;
- iii. Teachers do not get enough time for post-broadcast work, especially because most of the time broadcasting periods "clash" with normal school periods. This means that a teacher sometimes has to stop, for example, a Science lesson in order to listen in with his class as the lesson on another subject is being broadcast.

g. Overall Assessment of Quality

Because of the above mentioned problems, the programme has not been very effective. It has, therefore, become necessary for it to be reorganized.

h. Plans for the Future

The Ministry of Education recognizes the fact that teachers form the key factor in the implementation of any education reforms programme, and therefore the success of the educational reforms currently going on in Ghana depends largely on the competence and the commitment of teachers throughout the country.

The Ministry also acknowledges that radio can be an effective means of giving teachers in-service training on a massive scale. Therefore in the drive to use Educational Broadcasting to help upgrade the professional and academic competence of teachers, the Radio Schools Broadcast Programme is currently undergoing re-organization.

There is now a shift in orientation in that the programme is now more teacher-centered. (There will however be some slots for pupils at the basic education level, that is pupils in P1 - 6 and JSS 1 - 3.) Thus the programme will be in the form of distance education, which will use radio to transmit information and instruction to teachers wherever they are. Teachers will, in turn, become disseminators of information to their pupils and through them to parents and the community as a whole. In this way teachers will cease to be mere implementors of policy prescribed from headquarters. They will become animators, facilitators, advisors and guides for community participation.

Coupled with the shift in direction is the reduction of subjects to be broadcast. Initially it is planned that broadcast will be in three subject areas: English Language, Agriculture and Ghanaian Languages. These subjects have been selected because of their importance to the social, economic and cultural development of Ghana.

Finally, instead of the continued transmission of 10 minutes per slot, there will be pre-transmission and post transmission periods of 10 minutes each to allow teachers to prepare before transmission and discuss the lessons with their pupils after transmission.

What has been done so far

A Technical Committee has been formed to see to the implementation of policy on Radio Schools.

Since September last year the committee has met a number of times and so far the following have been done.

- a. Content outlines in the various subject areas have been drawn up.
- b. Script writers for the new programme have been identified.
- c. Specialists in various fields have drafted briefs for the training of script writers.

It is hoped that transmission of the new programme will start by September 1990 at the latest.

How the Conference Can Be of Assistance to Ghana

We hope to draw on expertise and experience of other participants to help draw up a final programme that will be an effective tool for the realization of the objectives of the Radio Schools Broadcast in Ghana.

ADDENDUM

Again, the non-formal division of the Ministry of Education plans to achieve "literacy for all by the year 2000."

It is estimated that about 70% of the adult population in Ghana is illiterate. Literacy campaigns are launched on the radio purposely to address this segment of the population.

An example of this can be seen in the Northern Region of Ghana, where about 60% of the regional transmission is devoted to adult education programmes in local languages. And in Apam, a town in the Central Region of Ghana, the same percentage of transmission time is allocated to adult education.

The Non-formal Division's future plans include setting up programmes for "Shepherd Schools," recently started in the northern part of the country to cater to children who do not attend school because they must tend their parents' flock.

EDUCATIONAL RADIO. IN GUINEA

Sow, Aliou
Chief Radio Project/IPN
Ministry of Education

GUINEA EDUCATION BY RADIO PROJECT

The Education by Radio project is part of the National Pedagogical Institute (Pedagogical Aids and Communication Division). This project is the result of cooperation between the government of Guinea and the ACCT (Agence de Coopération Culturelle et Technique).

CONTEXT AND JUSTIFICATION

The political change that occurred in the country in April 1984 and the institution of a liberal system have led to an upheaval in all domains of national life, particularly in the social and economic sectors.

In the education sector, the first National Conference on Education, held in Conakry in August 1984, decided on immediate reform. The most important resolutions made were:

- 1) Suspension of teaching in national languages (a system which prevailed at the primary level since 1968);
- 2) Reinstitution of French as the language of instruction at all levels of the education system, and
- 3) Implementation of a pedagogy of support, necessary to sustain efforts for the planned pedagogical innovation.

In relation to this last objective, the Ministry of National Education sent a request in 1985 to the ACCT, an international Francophone institution, asking the latter to contribute to an experimental project of Education by Radio. The objective of this project would be, on the one hand, to support the large programme for pedagogical and scientific development of primary school teachers and, on the other, to reinforce the learning process of school children in priority domains such as health and food education, protection of the environment, and the improvement of living conditions.

In this national desire to renovate the educational system, it is important to point out that there was a psychological component in providing teachers, above all those in the country, with moral support by broadcasting programmes designed for them. These programmes have been of a great value to teachers, as they substitute for teachers' lack of printed teaching guides, and also make parents sensitive to school problems.

This psychological component was absent from the programmes broadcast prior to 1984 on Radio Conakry by the National Pedagogical Institute. Indeed, the weekly programmes, "ACTUALITE PEDAGOGIQUE," launched at the beginning of the 1970's, were exclusively about socialist and revolutionary theories directed towards the "Centres of Revolutionary Education."

Answering favorably to the Guinean request, the ACCT took charge of the purchase of production equipment (studio and report materials) in 1986 and, at the same time, the training of producers and directors of educational radio programmes. The trainees included four secondary school teachers and two primary school teachers.

At present, the Guinea Education Radio Project has a sufficient infrastructure which guarantees autonomy in the production of programmes. The work is done by a small team which has good training technically as well as pedagogically. The infrastructure is composed of a 15m large studio, a production department, equipment for external and post production, a maintenance room and office space.

Apart from provision of the material to be used on the spot, the project works, despite the many difficulties it has had to deal with, thanks to the Ministry of National Education, which provided all the funding.

FUNCTIONING

The activities of the project in conformity with the 1989-1990 yearly programme are the following:

- a. the development of professional aptitudes of teachers through an appropriate distance learning programme;
- b. the development of information, awareness, and education planned in population, health, hygiene, food, protection of the environment, etc.;
- c. the organisation of Olympiads between schools through radio games involving most elementary schools in the country.

In agreement with Guinea Radio and Television, Education by Radio has one hour and forty minutes per week reserved for it in the general programme of broadcasting. This time is divided as follows:

- o One hour every Thursday (free day for primary schools)
- o Twenty minutes on Sunday evenings
- o Twenty minutes on Tuesday mornings

The Thursday hour (15:00 - 16:00) is devoted to broadcasting of radio games between schools, which are popularly known as "SCOLYPIADES." The remaining forty minutes are for the broadcasting of a teachers' magazine called "FREQUENCE PLUS." The latter programme is about pedagogy and information. The programmes are produced entirely in the project studio and broadcast by Guinea Radio and Television (RTG) which owns the transmitter.

Since January, 1987, when production really started, the Education by Radio Project has produced and broadcast 192 programmes of "SCOLYMPIADES" and 130 programmes for the magazine "FREQUENCE PLUS." We are now planning to target the schools in rural areas.

EXPECTED RESULTS

As a pedagogical and technical support to the training of students and teachers, Education by Radio programmes aim to contribute in:

- o Increasing efficiency in basic education;
- o Introducing teachers to active methods and to evaluation of teaching and learning;
- o Linking scientific subjects to what students actually experience every day; and
- o Production of simple teaching materials by teachers.

PERSPECTIVES

For the mid- and short-term, Education by Radio in Guinea will keep on implementing the programmes already launched, such as:

- a. Consolidating students' knowledge by stimulating their interest in developing their general culture and in encouraging a healthy intellectual competition between primary schools through the programme called "scolympiades."
- b. Increasing the training of teachers by means of multi-media systems including radio programs for teacher training, recorded cassettes and printed documents in 1990-1991.
- c. Pursuing efforts with USAID to realize the request of national authorities for an interactive radio education programme (1990-1995). This programme would contribute to increased school enrollments (the lowest on the continent), mainly in rural zones.

- d. Collaborating closely with rural radio, which is being established in the four main regions of the country, particularly in the conception and orientation of educational programmes.

CONCLUSIONS

The Guinea Education by Radio project is happy to participate in this conference in Harare which is about Education by Radio in Africa.

Our project hopes that this meeting will be a place to share opinions for the best use of the radio tool for the consolidation of education and training systems in our countries. We hope that this meeting will be the framework for an exchange of views which will lead us to co-production and exchange of programmes and documents. This is to be encouraged as our pedagogical problems are most often the same. The solutions found in one place could be resolved by problems encountered elsewhere.

Lastly, we would like express our thanks for being invited to this conference.

EDUCATIONAL RADIO: THE KENYAN EXPERIENCE

Mary Karue
Language Specialist
Kenya Institute of Education

The language policy for primary education in Kenya stipulates that the mother tongue be used for the first three years of primary school, and that English as a second language be introduced during this time as a subject. After three years, teachers are expected to use English as the medium of instruction to teach all subjects in the curriculum with the exception of Kiswahili, the national language. It is therefore very important that pupils receive a sound foundation in English during the first three years, so that they can receive instruction of other subjects in English after standard 3. It is also important that by the end of the primary cycle, when the pupils sit for the first national examination (Kenya Certificate of Primary Education), they understand the exam questions and be able to answer in English.

English language competency in Kenya is more often found in urban areas than in rural communities. The results of this first major national examination have, over the years, shown that children in urban areas have an advantage in the examination over the rural children because of their language proficiency. One of the reasons why this is so is that rural children are not in contact with speakers of English outside of school. A survey done before the start of the Radio Language Arts Projects showed that in the urban areas children are exposed to more books, magazines, newspapers, etc. than are children in rural areas. This advantage has contributed to the English fluency of urban youth.

Rural children have also been at a disadvantage because of a shortage of English learning materials. In most of the schools in the rural areas, children often share one English reading book between three or more children.

Before the start of the Radio Language Arts Project, the national service broadcast supplementary lessons to schools during the day. The lessons covered various subjects in the curriculum such as geography, English, secondary school supplementary lessons, and also pre-service broadcasts to teacher training colleges. There was and still are non-formal broadcasts, based in the Adult Education Department of the University of Nairobi.

By the time the RLAP was introduced, certain weaknesses were noted in the schools' broadcasts. For example, tapes were repeated over and over again. Teachers were not excited about tuning in to the radio broadcasts and, as a result, they often left the classroom while the children listened to them. Teachers did not take the broadcasts seriously and, thus, the broadcasts were not effective.

It is against this background, then, that the Radio Language Arts Project came into being. A centralized team of Kenyan and American language experts translated the existing primary English curriculum to fit the radio broadcast materials. This took time and a lot of thought. The team wrote the scripts, produced them and did teacher training, including the preparation of lesson plans for classroom teachers. The actors in the studio acted as radio teachers. The pupils in the class interacted with the classroom teacher, who would ask individual children to perform certain tasks suggested by the radio teachers. The classroom teacher assisted the radio teachers with some learning activities after a request such as: "Teacher, please write the word 'market' on the chalkboard."

The pupils in the class also interacted with radio teachers who sang and played games with them. A radio teacher also gave directions to children in the class; for example, he/she would say:

"Boy Number One, stand up," or
"Girl Number Three, go to the door."

The pupils in the class would talk to the radio characters and even answer their questions. Throughout the lessons, the classroom teacher would respond with the pupils to the radio teachers. This all around interaction supports the conclusion that IRI does not replace the teacher in the class, but works together with the leader to enhance learning.

Interactive radio programmes were broadcast in the morning for 30 minutes every day for the entire school year. Following each broadcast, classroom teachers led supplementary lessons.

How did the interactive radio programme address the critical issues and problems we cited at the beginning of this paper? Interactive radio might not have an answer to all the problems that we mentioned, but it may have helped in the following ways:

1. In terms of reading material, children in RLAP classes had individual worksheets with which they could practice reading;
2. The radio teachers provided a model for the pupils in their English pronunciation.
3. A summative evaluation conducted by Professor George Eshiwani showed that all of students' English skills (reading, writing, speaking and listening) improved significantly.

There are plans for a survey to see how the pilot project pupils performed in the national examination at the end of primary school. It is hoped that they performed better than their counterparts who did not receive the radio lessons.

EDUCATIONAL RADIO BROADCASTING IN LESOTHO

J.R. Sakoane, IMRC

My regional and international colleagues, this conference is held at an opportune moment when there is regional and international revolution in distance learning/teaching. This educational revolution is triggered amongst other things by the number of illiterates which is approaching a billion worldwide while the number of children without access to any primary education approaches a hundred million worldwide. (World Conference on Education for All paper, 1989 unpublished)

In Lesotho alone the number of illiterates is estimated at 38%. These figures pose a great challenge to conferences such as this one and many others of this nature.

This conference can mobilize, revolutionize and conscientize African educators and leaders about the need for education for all, as well as help to establish stronger regional and international linkages in distance education and the right to education.

Head W. Sydney (1974) writing about educational inequalities caused by economic constraints, different delivery systems, etc., argues that amongst the delivery systems, radio has proved to be a very powerful tool in developing countries. His study indicates that success in radio broadcasting has been realized in African politics, in socioeconomics, in education, and other socio-cultural aspects. African broadcasting experience is different from that of industrialized countries because in most African States, radio stations are owned and controlled by the state. Ethiopia is the one exception for it has a non-government-owned station -- the Voice of the Gospel -- which acts as a healthy element of competition broadcast in the country (1969 survey).

In almost all developing countries, radio seems to have been used or is being used successfully in development projects (Katz & Wendell 1977). Radio is used to teach numeric and literacy skills, family planning, agricultural productivity, and a myriad of other development communication projects. (Media in Education and Development Vol. 18 No. 3 Sept 1985).

With this broad overview of radio for development communication, let me focus on experiences of educational radio broadcasting in Lesotho, the Mountain Kingdom.

Broadcasting in Lesotho started in August 1964, two years before independence. It was appropriate for the Lesotho government to have felt a need to be held responsible for information accountability, and by providing air-slots to different government ministries and other parastatal organizations in order to broadcast national development projects.

Different ministries grabbed this opportunity to disseminate information. The Ministry of Education, through Lesotho Distance Teaching Center (LDTC) and through the Instructional Materials Resource Center (IMRC) requested air-slots in order to broadcast non-formal and formal education in 1974 (LDTC Report 1989). The center provides radio correspondence courses for private candidates for junior certificate (JC) and for Cambridge Overseas Schools Certificate (COSC).

The 1989 LDTC evaluation report indicates that LDTC registered 468 JC students and 353 COSC students for the academic year, 1989. Since the beginning of its educational broadcasting, LDTC has produced 1149 radio graduates at JC level. COSC radio graduates analysis could not be available at the time of writing this paper. IMRC in collaboration with the English Division of the National Development Curriculum Center broadcasts supportive primary English radio programs for grade one, two and three, Monday through Friday during school sessions. There is a well qualified producer who strictly supervises and monitors the four talents and a musician during the whole production. The schools are provided with accompanying print materials in order to have pre-broadcasting as well as post-broadcasting sessions with the students. A Survey has recently been conducted to investigate the effectiveness and efficiency of radio programs but the survey analysis could not be available at the time of writing this paper.

An interactive radio instruction (IRI) program has recently been introduced to Lesotho. This is an adaptation of the Kenyan interactive radio which is, itself, a model of the Nicaragua Radio Mathematics Project that was launched in Nicaragua in 1973. The Ministry of education, through the National Curriculum Development Center, has organized districts and national dissemination networks whose responsibility, amongst other things, is to help teachers know how to help students learn through the radio. Around October/November the English Division of NCDC, the radio producer and the talents visit some of the schools in order to observe how teachers monitor the radio lessons.

Other IMRC radio productions include programs that provide a forum for the public to inquire about the Ministry of Education activities, as well as counseling and guidance programs. In both these programs the producer receives letters of inquiry from the public/students/teachers about programs of study and questions on how to treat a certain topic in class. No studies have been conducted about the success of these programs. The flow of letters indicate some degree of listenership.

Another ministry which has air-slots at prime time is the Ministry of Agriculture, whose goal is to promote agricultural productivity and the socio-economic growth of the citizens of Lesotho. According to the 1989 Agricultural Information Survey of two districts, Botha-Bothe and Mhales' Hoek, agricultural

information listenership was rated as 72% and 65% respectively. Through these radio broadcasts, Lesotho has formed poultry associations, piggery associations and many other farmers' associations. No studies have been conducted to determine the degree of effectiveness of these agricultural radio programs, but by observation, the programs have an impact on Basotho farmers.

The Ministry of Health also shares air-slots with the radio station in order to teach the community about communicable diseases such as AIDS, and good health practices. From observation alone, these health radio programs seem to have changed Basotho attitudes toward communicable diseases.

Several studies indicate that radio is a powerful national resource as long as radio programs are closely tied to the culture of the people and the national economy in order to elicit support from listeners.

LESOTHO RADIO LANGUAGE ARTS PROGRAMME (L.R.L.A.)

S. Gcwabe
Curriculum Research Officer

INTRODUCTION

In Lesotho radio teaching has been used since the early seventies. Three examples of radio teaching are:

1. A programme on Secondary Schools' English on Comprehension Exercises. (SEE PAPER IN THIS PRESENTATION)
2. A primary programme offered to some select schools, termed Experimental Schools, broadcast English from 10:00 a.m. to 10:30 a.m. to standards One and Two.
3. Programmes on teacher education. These programmes are part of the in-school system focusing on teaching of English to schools. They are targeted at teacher training institutions and consist of four lessons on methodology, how to teach reading to pre-school children, songs and rhymes, and four lessons on principles of education under the title: Teaching and Learning. Different topics are discussed in these programmes.

WHY TEACH PRIMARY ENGLISH BY RADIO

In Lesotho, the majority of pupils admitted into Year One do not speak English and they therefore come into contact with English for the first time in school. There is a feeling in the country that very little oral English is taught effectively nowadays.

The Radio Language Arts Programme, therefore, backs up the teaching/learning of Oral English at the lowest primary level.

- o The syllabus also, within its topics, has One-Radio Lessons.

ASSISTANCE IN KIND

- o The country thanks the Basic and Non-Formal Education Systems (BANFES) and, in particular, Dr. Philip Christensen who at the initial stage did all he could to make this Radio Programme a success.

- o Lesotho will not forget to say "Thank you" to the United States Agency for International Development (USAID) for purchasing and selling radios (1500 in number) at a subsidized price of M60.00 (U.S. \$15) instead of over M300.00 to schools.
- o Our thanks are also extended to both parties: - BANFES and USAID for sending us a consultant in the person of Dr. Maurice Imhoof to look into the adaptation of lessons from those of Kenya.
- o The Ministry of Education was also kind enough to appoint a teacher (who is a member of the Primary English Panel) to the English Division of N.C.D.C., Mrs. A.M. Mokhahlane, to come to help the division as local input.
- o We are also very grateful to Instructional Resource Materials Centre (I.M.R.C.) for their kindness with the Actors to record our lessons in their Audio-Visual Aids Section.
- o Radio Lesotho has also provided air time for our broadcast.

THE PILOT TEST

The programme was pilot tested in five schools in 1987. The English Division, in conjunction with the Primary English Panel members, monitored the test and worked with Standard One classes and teachers to make the test a success. The test was conducted during the month of February.

The response was very positive.

- o The young children enjoyed learning English by radio.
- o The vocabulary that they learned was impressive during the four weeks.
- o Pupils showed much in the programme. They spoke English and sang songs out of class.
- o Teachers involved were very enthusiastic and wanted the programme to be implemented.

IMPLEMENTATION

The radio programme is supplementary to the normal English Programme. It was introduced to more than 83,000 pupils in Standard One in 1988. This is a 30-minute programme from Monday to Friday. Teachers' Notes, Pupils' Worksheets (books) and timetables are distributed to subdistrict centres, 69 in all, in the country. These radio materials should be in the schools before a term begins. Teacher training helps teachers learn how to effectively utilize the radio programmes in their classrooms. For this reason we, in the English Division of N.C.D.C., hold radio workshops by September/October of the year preceding the introduction to a class, to train teachers from sub-district centres who will go back and make further training in their respective areas. The classroom teacher plays an important role in the classroom in that she works with the radio and the pupils. Another aspect is that the teacher prepares lessons before and after the broadcast, i.e. before the broadcast the teacher reads the notes carefully and collects all required materials. After the broadcast the teacher conducts a post-activity lesson to deal with whatever problems pupils had in the day's lesson, e.g. pronunciation, etc. The total number of lessons is 175 in each class. Standard Two lessons were introduced to schools in 1989 and Standard Three this year, following the above procedure.

INTERACTIVE RADIO INSTRUCTION

Interactive radio instruction uses low cost radio transmission to deliver carefully designed instruction to a majority of children in Primary Schools in Lesotho. These broadcasts have a very high frequency of pupil participation, with pupils responding to the radio every few seconds by using all the four skills required in language development, i.e.

Listening
Speaking
Reading and
Writing

In addition to these skills, music brings about active physical activity.

HOW RADIO LESSONS FIT INTO THE SYLLABUS AND COURSE BOOKS

An important way in which L.R.L.A. fits into the content aspect of the Syllabus and Course Books is that English at lower primary classes in Lesotho aims at providing preliminary language experience which prepares pupils to learn English better at upper primary.

EVALUATION

An evaluation test was administered to Standard Two classes at the end of the year in 1988. This test was conducted in 23 schools in different districts and different physical conditions. This class had not yet learned English by radio. At the end of 1989, the same test was conducted to Standard Two pupils who had learned English by radio. The purpose of the test was to compare the results of the two tests and find the usefulness of teaching/learning English by radio. The analysis, even though not complete, shows that a large number of pupils have scored higher marks last year than those of the year before last.

OUR EXPECTATIONS

We believe that the L.R.L.A. will be an effective strategy to improve the teaching of English because:

- o It will set a common standard of excellence across the country.
- o It will pace classroom lessons to provide variety, thus increasing enthusiasm.
- o L.R.L.A. will reduce differences between rural and urban schools, as well as mountain and lowland schools, by providing the same basic instruction to all schools in the country.
- o Teachers value the support provided by radio. However, we had some problems at the beginning of the innovation, which have now been solved.

ENGLISH BROADCASTS IN SECONDARY SCHOOLS

In the early seventies, Lesotho established the position of English Teacher Advisor, whose job was to help improve the falling standards not only in English, but also throughout the educational system. To begin with, more concerted effort was put toward improvement of the teaching of English. Although everybody was conscious of the wisdom of starting at the Primary level, it seemed easier to start at the secondary school level, perhaps because of the small number of schools and the level of qualification of most teachers of English at this level. Only afterwards would action be taken at the primary school level.

Following extensive consultations with teachers of English throughout the country, the syllabus which was designed emphasized the development of listening, speaking, reading and writing skills.

Through a series of writing workshops, material was prepared for the realization or achievement of the respective goals set: Let's Speak English for the development of speaking skills; Let's Use the Dictionary for the development of reference skills for reading. A class library consisting of a wide selection of graded books was initiated. In these, there was a built-in element for the development of reading skills. The scheme was highly successful, and these materials are still to be found in some schools.

Educational broadcasts were begun to help develop listening skills. Through arrangements with Radio Lesotho, time was set aside for these broadcasts to coincide with the timetable in schools -- mornings and afternoons.

Each secondary school was then given a radio set. There were fewer secondary schools then, and no more than seventy radio sets were given away.

The Listening Skills Programmes consisted of interesting stories, as well as factual and scientific passages with comprehension questions based on them, to test listening. These programmes were mailed to all the secondary schools so that teachers of English could follow the lessons during the broadcasts or, if the reception was poor, the teachers themselves, or somebody nominated by the school, would read to the class and ask the questions.

The purpose of these broadcasts was to develop listening skills, with the aim of preparing candidates for the 30-minutes' JC Listening Skills English Language Examination.

Although listening is still part of the JC English Language Examination, one doesn't hear the listening skills programmes over the air anymore. It is possible that this is now the responsibility of individual schools, through their respective teachers of English, which would mean that the variety the radio broadcasts used to provide is now missing.

I doubt that the radio sets once donated are still in the schools. For one thing they would be quite old by now.

By the way, both the radio sets and the class library boxes were made available through the generosity of the British Council.

THE USE OF INSTRUCTIONAL RADIO BROADCASTS IN PRIMARY EDUCATION IN LIBERIA

B.R. Jallah
Deputy Minister of Education,
Ministry of Education

Overview of Primary Education in Liberia

The primary education system in Liberia consists of one to three years of pre-primary and six years of primary school education.

The Bureau of Primary Education is responsible for Primary Education. It supervises all primary education activities in public, private, and mission/church-related schools.

Primary education has been identified by the Ministry of Education as one of the major priority subsectors for development over the next five years.

The major goals in primary education are to improve the quality of instruction, to expand access in a way that addresses regional and gender equity, and to enhance the administrative and supervisory capabilities of the Ministry of Education.

The Ministry of Education, through the Bureau of Primary Education, is achieving some of these goals by the implementation of the Primary Education Program (PEP), which is an instructional system that has been adopted as the national program of primary education in Liberia. PEP is being implemented under the MOE/USAID funded Liberia Primary Education Project (LPEP). This project evolved from the Ministry of Education's Improved Efficiency of Learning (IEL) Project which designed, tested, and validated the instructional system.

The purpose of the Primary Education Program is to upgrade the quality of instruction in all public primary schools of Liberia by the printing and distribution of programmed instructional materials (in Reading, Language, Mathematics, Science and Social Studies) based on the national curriculum; by the in-service training of teachers, principals and instructional supervisors in the PEP Methodology; by the provision of adequate supervision of classroom teachers; and by supporting training and supervision with radio broadcasts.

Teachers and principals new to PEP are given five weeks of in-service training, followed by on-site supervision and in-service support through radio broadcasts. As of the 1990 school year, nearly 600 primary schools will be using the instructional system.

To meet other needs in primary education, the Bureau is implementing the Population Family Life Education Project, a three-year project which was launched in June 1988 and is sponsored by the Government of Liberia, the United Nations Fund for Population Activities and UNESCO. The project's goal is to improve the quality of life in Liberia by helping future parents learn to control population growth through education. The Project has developed instructional materials on population family life education for grades three to six. The materials are now being tried out in representative Liberian schools. After the materials are validated, they will become an integral part of instructional materials for primary schools. Radio programming may be a viable method of training primary teachers in the use of these additional materials.

The Ministry of Education, realizing that children with a wholesome early childhood development are more likely to cope with and complete primary education, is giving priority to activities to improve the quality of pre-primary education, including the development of reading readiness materials for pre-primary children.

Objectives of Radio Broadcasts

The following are the general objectives of instructional radio broadcasts in primary education:

- o To provide consistent follow-up to concepts and information given to educational personnel (teachers, principals, instructional supervisors, district educational officers) in annual in-service training workshop.
- o To extend the reach and effectiveness of field supervision.

Learning Time

"Learning Time" was the first attempt the Ministry of Education made in instructional radio broadcasts for primary education between August 1986 and December 1988. "Learning Time" consisted of a series of forty 15-minute programs which were broadcast twice weekly over the three regional stations of the Liberian Rural Communications Network (LRCN) to teachers in schools using the Primary Education Program.

The purpose of the programs was to strengthen the training that teachers and principals receive in a five-week workshop. The programs reinforced training for teachers in classroom management, content, and teaching methodology and training for principals in classroom supervision.

The PEP Pilot Radio Project

Feasibility Study. The Agreement between the United States Agency for International Development and the Government of Liberia for the Primary Education Project, which was signed in June 1987, suggests the use of instructional radio broadcasts. Based on this, Dr. Richard C. Burke and Dr. Richard N. Cowell were contracted in early 1988 to conduct a study entitled: "The Feasibility of Using Radio Broadcasting to Support Education in Liberia." After this study, the Project Administration decided to conduct a pilot radio study.

What is the Pilot Radio Project? The Pilot Radio Project consists of the administration of a pretest, the broadcast of sixty radio programs to teachers and principals over a 20-week period, and the administration of a post-test.

Purpose. The purpose of the Pilot Radio Project is to determine the effectiveness of radio broadcasts as a mode of instruction for training teachers and principals, and reinforcement of teaching and administrative skills.

Expected Outcome. It is expected that the study will reveal:

- o The extent to which teachers and principals take the time to listen to the programs.
- o Instructional growth, if any, of teachers and principals.
- o The impact of field supervision among the teachers and principals not receiving the radio programs.
- o The extra impact, if any, of the radio programs on field supervision.
- o Whether the Ministry of Education should use radio broadcasts or not.

Objectives and Content for Radio Programs. The objectives and content of the radio programs are based on the content of grade two Programmed Teaching Reading modules, the PEP Programmed Learning methodology, and the methodology from principals' training in PEP administration.

The instructional materials used in the Primary Education Program are based on two forms of programmed instruction. The forms are Programmed Teaching and Programmed Learning.

Programmed Teaching, an instructional design format, was used to design modules for grade one through the first semester of grade three. The modules were designed in Language, Reading, Mathematics, Science, and Social Studies. The modules contain both the content and the method of instruction. The content is presented in the form of scripts for the teacher to read, pictures to show, words to read, sentences to copy on the blackboard, and questions to ask. The method specifies what type of questions to ask, how to distribute the questions, what signals to use to elicit responses, what responses are acceptable, how to provide corrections if the response is not acceptable, and what to do when the correct response is given.

Programmed Learning is the instructional design format which was used to design modules for the second semester of grade 3 and grades 4, 5, and 6 in Language, Reading, Mathematics, Science and Social Studies. These modules are self-instructional. They are used by peer groups for group study. PL does not involve the teacher directly during the learning process except to monitor, correct, and reinforce positive learning behaviors. PL learning content, activities, and procedures are specified in the PL modules.

The content is divided into sections. Each section has instructions for student leaders who guide group activities. For example, when the leader is instructed to "Take Turns Reading," he or she shows the group what is to be read; then reads. He reads out loud first and, beginning with the learner on his left, the rest of the group members take turns reading out loud.

The target audience is generally all teachers and principals in 350 schools using the Primary Education Program and, specifically, grade 2 teachers who use Programmed Teaching materials, and grade 5 who use Programmed Learning materials. The Pretest and Post-test were administered to these two groups of teachers.

Comparison groups. The 350 schools fall into three distinct comparison groups for study.

- o The primary intervention group consists of schools in 3 counties (Lofa, Grand Gedeh and Bong) that can receive LRCN broadcasts and were supplied with a radio.
- o The secondary intervention group consists of schools within reception range of the LRCN Stations, but were not supplied with a radio.
- o The control group consists of schools that do not lie within the reception range of the LRCN Stations.

Project status. The pretest was administered. It has been analyzed and the results reported. The sixty fifteen-minute programs were developed and broadcast between 5 June 1989 and 17 November 1989. The post-test has also been administered, and it is now being analyzed. The final report on the study is expected to be completed in early February 1990.

For further information write to:

Mrs. Janice M.T. Vani
Assistant Minister for Primary Education
Bureau of Primary Education
Ministry of Education
Monrovia, Liberia

PEP PILOT RADIO PROJECT

Bureau of Primary Education
Ministry of Education
Monrovia, Liberia

1. Objectives of the Programs:

- o To provide consistent follow-up to concepts and information given to educational personnel (teachers, principals, instructional supervisors, district educational officers) in annual in-service training workshop.
- o To extend the reach and effectiveness of field supervision.

2. Number and Descriptions of Courses:

- a. Sixty 15-minute programs
 - o Twenty (20) based on the content of grade two Reading Programmed Teaching Modules.
 - o Twenty (20) based on the methodology of Programmed Learning instructional materials.
 - o Twenty (20) based on the methodology of principals' training in PEP administration.
- b. A pretest and posttest based on contents of the sixty programs.

3. Role of the Radio Programs (e.g., supplement, enrichment, core instruction):

The programs are for supplementing and enriching.

4. Hours of Broadcast Per Week:

- a. 1 hour 15 minutes per week.
 - o Each PT program was broadcast once and repeated once.
 - o Each PL program was broadcast once and repeated once.
 - o Each principals' program was broadcast once.
- b. Each program was broadcast during recess time (10:00 am).

5. Audience/Coverage:

a. General

Teachers and principals in 130 schools using the Primary Education program.

b. Specific

Grade two and grade five teachers in the 130 schools to whom the pretest and posttest were administered.

6. Results of Evaluations (if any):

Results of evaluations will be available in February, 1990.

7. Overall Assessment of Quality:

Positive and encouraging.

8. Plans for the Future

a. To continue broadcasts to support PEP training and supervision.

b. To teach content to teachers studying to attain the "C" certificate, the minimum qualification as a teacher.

c. Broadcast programs on both AM and SW in order to reach all schools.

9. How Can the Conference be of Assistance to Liberia:

a. To provide information on experiences in the development and implementation of instructional radio broadcasts that could:

o assist in strengthening the current radio programs.

o assist in expanding the current radio program to include some learning activities for students (e.g., in language).

b. Provide information on the value of placing programs on cassettes for secondary use by teachers at country instructional materials centers for use at training sessions.

EDUCATIONAL BROADCASTING IN MALAWI

B.G. Muwowo, Senior Producer
Malawi College of Distance Education
Chichiri, Blantyre

INTRODUCTION:

The 1960s was a period of exponential growth of educational provision and school expenditures, boosted by an almost euphoric belief in education. It was during this era that the Malawi College of Distance Education (previously known as the Malawi Correspondence College and Broadcasting Unit) was established as a department of the Ministry of Education and Culture.

1. HISTORICAL BACKGROUND:

- 1965 - Correspondence College was established as a department of the Ministry of Education and Culture
- 1965 - Schools Broadcasting Unit was founded as a department of the Ministry of Education and Culture
- 1973 - The Correspondence College and the Schools Broadcasting Unit merged to form Malawi Correspondence College and Broadcasting Unit.
- 1987 - The College was renamed Malawi College of Distance Education.

2. OBJECTIVES OF MALAWI COLLEGE OF DISTANCE EDUCATION:

- o To provide Primary Education to nationals who failed to complete basic education.
- o To provide Secondary School Education to primary school leavers.
- o To provide Teacher-Upgrading courses.

3. STRUCTURE OF THE COLLEGE:

The College is organized into five sections:

- o Administration, including Accounts
- o Tutorial and Student Services
- o Schools Broadcasting Unit
- o Print
- o Research and Evaluation

4. COURSES OFFERED:

The College offers the following courses:

Primary School Leaving Certificates course
Junior Certificate course
Malawi School Certificate of Education Course, GCE "O"
Level equivalent.

Teacher Upgrading courses: Primary Teacher Grade 4 to
Junior Primary Teacher Grade 3; Junior Primary Teacher
to Senior Primary Teacher Grade 2.

5. GROUPS OF STUDENTS:

Since the establishment of the College in 1965, the number of enrollees of the College has been increasing. For instance, in 1965 total enrollment was 1,424, in 1989 the total enrollment was 16,559. These enrollees are in three groups:

- o Home Study Students
- o Study Centre Students. There are 105 study centers where students are admitted and registered full-time. The centers have Teacher/Supervisors who give face-to-face contact to the students.
- o Night Secondary Schools. There are 28 Night Secondary Schools, operating for two hours in the evenings. Teachers from the formal secondary schools teach and supervise the students.

6. MODE OF TUITION:

There are three modes of tuition:

- o Printed materials, which are prepared by Tutors who work closely with contracted writers.
- o Face-to-face teaching through the Teacher/Supervisors in the centers and Night Secondary Schools.
- o Radio Programmes, which are prepared at the College by Producers who work closely with tutors and contracted script writers.

7. EDUCATIONAL BROADCASTING:

- a. The College has a Schools Broadcasting Unit which was established to organize schools broadcasts at primary, secondary and teacher training levels.

- b. The Unit produces programmes specifically designed to supplement, complement and enrich the printed materials for students who study with the College at the specified levels, i.e., Primary School Leaving Certificate courses, Junior Certificate courses, Malawi School Certificate courses and Teacher Upgrading courses.
- c. In addition to these programmes, the College also broadcasts to targeted primary school classes, i.e. pre-primary classes and junior primary school. The objective of these broadcasts are two-fold: expose pupils to a variety of voices, and to supplement classroom teaching by the teacher.
- d. Radio programmes are broadcast over the Malawi Broadcasting Corporation's Network. These programmes take a total of 14 3/4 hours a week as follows:-

<u>COURSES</u>	<u>AMOUNT OF TIME/WEEK</u>
Primary School	5 1/2 hours
Junior Certificate	4 hours
Malawi School Certificate	1 1/2 hours
Teacher Training/Upgrading	2 1/4 hours
General Programmes	1 1/2 hours

e. **RADIOS AND CASSETTE RECORDERS:**

The College supplies radios, cassette recorders and cassette programmes to the study centers only. Each study center has at least two radios and one cassette recorder. Batteries are sent to the centers almost three times in each academic year.

f. **SUPPORT MATERIALS/OTHER SERVICES:**

The College prepares programme guides for use by Teacher/ Supervisors. The guides spell out what is to be covered during the programme, what the Teacher/Supervisor should do before, during and after the programme. Assignments and answer guides are also included in the guides. The College also dubs programmes on cassettes for use by other institutions and individual students when requested.

g. **MAINTENANCE OF AUDIO EQUIPMENT:**

A studio engineer is stationed at the College. Centers send out-of-function radios/recorders to the College for repairs and get replacements from the repaired stock.

8. PROBLEMS/CONSTRAINTS:

Enrollments are increasing rapidly. In the period 1987-88 there were 12,000 new enrolles, and in the period 1988-89 there were 17,000 new enrolles, giving a percentage increase of approximately 42%. This rapid increase in enrollments is causing a strain on:

- o the supply of study materials to students
- o the supply of radio/cassette recorders and batteries to study centers.

Malawi lacks adequate qualified personnel both in distance education and educational broadcasting, which means that study materials (sets and radio programmes) are not received as regularly as they should be.

9. POSSIBLE SOLUTIONS:

The College drew up a three-year development plan under a project funded by the British Government as part of the World Bank's on-going assistance. Under the plan various activities are being undertaken. They include:

- o consultancies to the College sections;
- o training programmes for personnel development;
- o renovations to College buildings to be suitable for distance education activities;
- o establishment of regional offices in the three regions of the country, which will help decentralize activities of the College.

The use of solar-powered radios and re-chargeable batteries is being investigated in order to ease the problem of supplying centers with dry cells, which expire quickly.

For further information:

B.G. Muwowo (Senior Producer)
M.C.D.E.
Private Bag 302
Chichiri,
BLANTYRE 3, Malawi.

SCHOOL RADIO IN MALI

Neguedougou Sanogo
Institut Pedagogique National

INTRODUCTION

Being a radio man as well as a teacher, I must start by telling you that my country, Mali, hosted the Conference of Ministers of Education of the Sahel Countries in Bamako from 15 to 18 January, 1990; the theme was: the problems of basic education. And I think that the results of that conference can be useful to us here as we are discussing very similar issues. Let us now talk about school radio in Mali. Radio education started in Mali over twenty years ago. Initially called "Pedagogical research," the programme has been called "The World of Education" since December 1988, and our activities have been quite varied.

I. Organization of school radio programmes

There is, within the Ministry of Education of Mali, a Planning Committee responsible for designing school radio programmes. The Committee is made up of:

- o one representative of the National Directorate for Basic Education;
- o one representative of the National Directorate for Secondary, Technical and Professional Education;
- o one representative of the National Directorate for Higher Education and Scientific Research;
- o one representative of the National Centre for Scientific and Technological Research;
- o one representative of the National Directorate for Functional Literacy and Applied Linguistics;
- o one representative of the Board of Education projects;
- o one representative of the National Directorate for Planning and School Equipment.

The Committee also includes the Heads of Departments and the members of the Non-Formal Department of the National Pedagogical Institute.

The Committee is chaired by the Director of the National Pedagogical Institute. The Committee meets at the end of each school year (November/December) to discuss the various proposals sent by the Directorates and adopt the programme of activities to be implemented over the following year.

The National Pedagogical Institute finances all working material required, e.g. tapes. School radio in Mali is under the Training Department of the National Pedagogical Institute, within the "Non-Formal training Section."

II. Radio Education Activities

School radio is aimed at supporting teaching. Therefore, we produce a very wide range of programmes:

1. Pedagogical programmes for the teachers: to make up for the lack of training of some teachers, and the lack of teaching material. These programmes help them to improve their teaching methods and therefore improve their performance in the classroom.
2. Programmes for the pupils: to help pupils better understand some subjects (French grammar and essay-writing, maths, etc.). School radio supports the various "Operations" (French, Maths, Physics and Chemistry) launched by the National Pedagogical Institute. The aid of such "Operations" is to produce new teaching aids for the teachers and the pupils, especially in primary schools, but also in secondary schools. They present new teaching methods for the various subjects, which improves the efficiency of the teachers. We produce the programmes together with the specialists who work for these "Operations." Thus, all the teachers, wherever they may be, receive the message.
3. Programmes for Malian society as a whole:
 - o programmes on "daily language," aimed at correcting some common mistakes in the way people speak in the street, at the office, at home or in a speech;
 - o programmes aimed at criticizing some social evils in our society; e.g. juvenile or "senile" delinquency, alcoholism, irresponsibility of some parents in terms of their social duties, abandonment of their culture, high divorce rate and the impact of all this on the psychology of the children, rural exodus, etc.;
 - o programmes aimed at school-children's parents, to inform them about any teaching innovation, to explain the Malian education system, in order to get a closer collaboration between school, home, and society as a whole;
 - o finally, radio education answers the needs of any National Education Directorate that proposes new themes for programmes. There are also specific programmes aimed at informing people of the operations of the Ministry of Education. School radio programmes come out on the air on Sundays at 8:30 a.m., until 9:00 a.m., on "Radio Mali."

III. Problems

At the Institute, we do not have enough equipment and cannot therefore go too far inland, which is a serious limitation.

Secondly, we do not presently have our own recording studio. The facilities are there, but the equipment is obsolete and we therefore have to go to "Radio Mali," where unfortunately there is only one recording booth.

IV. Perspectives

We hope to further develop our activities and to increase our performance. In Mali, an "On-going Training Centre" has just been set up. It will train people to use new techniques, will offer re-training for teachers, and will also offer distance education for everybody. No doubt our school radio will play a more important role.

CONCLUSION

Radio education in Mali is quite diversified. Some programmes are produced by the National Channel for the rural world. In addition to "Green Sahel," "Agriculture on the air," there is also a programme entitled "Poy Kan Poy," every Friday for the whole day, meant for all peasants, fishermen and shepherds in Mali. All these programmes, in national languages, are meant to educate the rural people, a very important aim since rural people represent the basis of Mali's economy.

There is a programme entitled "Health for all" on health issues. The National Directorate of Functional Literacy also has its own radio and listening groups which have been organized to listen to these programmes, specially designed for them. People listen to the programme together and then discuss the issues with a well trained facilitator. They then fill in a form in which they give their ideas and suggestions. The forms are then sent back to the Directorate, where they are analyzed and the programmes corrected accordingly. These programmes are in national languages.

We hope we will be able to introduce interactive radio instruction at the National Pedagogical Institute as soon as we can.

**THE USE OF RADIO AND TELEVISION
AS EDUCATIONAL MATERIALS: THE CASE
OF THE NATIONAL EDUCATIONAL TECHNOLOGY CENTRE (NETC)
KADUNA, NIGERIA**

Dr. Joe De-Goshie
Director
National Educational Technology Centre,
Federal Ministry of Education,
Kaduna, Nigeria

INTRODUCTION

The revised National Policy on Education (1981, p. 43) has unequivocally stated that:

Radio and television are products of the technological age designed, among other things, to improve communication. They are also being used for the development and improvement of education as well as for the expansion of instructional techniques. Where the facilities exist, radio and TV broadcasting will form a permanent feature of the education system and, in this regard, the Broadcasting Services, the Ministries of Education and other educational agencies will work closely together. Government has already approved the expansion of the Schools Broadcasting Unit of the Federal Ministry of Education into an Educational Technology Centre.

Thus the role of radio and television in the educational system of Nigeria, as well as the potential contribution of the National Educational Technology Centre (NETC), has been more than clearly enunciated.

The primary purpose of this paper then is to briefly share with you the modest efforts that have been made and continue to be made by the NETC in the implementation of the Federal Government's policy on the application of technology in education, with particular emphasis on the provision of educational radio and television programming in Nigeria.

Mass Media and National Development

The recognition of the potential role of mass media in national development, particularly of those countries often referred to as the Third World, came at the beginning of the first development decade in the sixties when students of communication (Lerner, 1958; Schramm, 1964; Rac, 1966; Rogers and Svenning, 1969) expressed very high hopes for what mass media could do as an agent of social change.

Schramm (1964), for example, argued that "in general," the mass media are quite capable of handling the basic information tasks of development by themselves." In a similar tone, Rao (1966) claimed that "it is through communication that people can learn about new ideas, can be stimulated by change which is conveyed to them or be cognizant of change and what it means, and can understand what is going on around them...and be conscious of that which is going on around an individual in which he may be directly involved -- for only then can they actively participate in the development process when the opportunity presents itself. If one is not conscious of what is going on outside his immediate world then opportunity itself will not be recognized. For any development to take place, opportunity must be seized (and often created) by a large number of people in any given community. Otherwise development remains lopsided and the fruits of growth are not shared." And Rogers (1969) emphatically proclaimed that "modernization is essentially a communication process."

Similar enthusiastic views about the potential of mass media in the development process were equally shared by early media practitioners in several developing countries.

For example, at a 1964 UNESCO Conference on Television in Africa, held in Lagos, and attended by top executives from more than twenty African nations with television, practically all the delegates recognized that, "especially in developing countries, television is potentially more powerful in its impact than any other form of mass communication." Indeed one of the North African delegates went on to say that:

Of all the mass media, television is undoubtedly the most powerful and effective. Combining image with sound, it constitutes a complete medium intelligible to all, the intellectual as well as the illiterate (Bass, 1969).

At the same 1964 UNESCO Conference on Television in Lagos, the Director of Nigerian Television claimed that broadcasting provides the best way of removing the existing disadvantages and speeding up the many-sided development which is so urgently needed in all African countries. And from Asia, a television commentator has written that developing countries attach a greater importance to television than the advanced countries do since it not only raises a nation's educational level and provides the people with both culture and entertainment, but also contributes to the political stabilization of the countries concerned (Takanayagi, 1962).

Thus, from these available sources, there appears to be sufficient evidence to suggest that early media students and practitioners, as well as academicians, believed in the indispensable contributory role of mass media in national development. However, others (McNelly, 1970) cautioned against over-enthusiasm of mass media's role in development.

Historical Background of Educational Broadcasting in Nigeria.

Though the impetus for the universal application of media in education began in the early sixties, the history of educational broadcasting in Nigeria dates as far back as 1933 when, immediately after the British Broadcasting Company (BBC) London transmitted the first programme in its West African Overseas Services, an article appeared in the "Nigerian Teacher" urging the Nigerian Government to introduce educational radio into the schools. But the idea attracted no response since it was just two years before the BBC set up its own Schools Broadcasting Service in 1935. Nevertheless, it clearly showed the thinking of the teaching profession at such an early stage of Nigeria's educational development. Twenty years later, in 1955, the demand for educational radio services had reached such a level that the Nigerian Broadcasting Corporation (NBC) had to set up a commission under an ex-head of BBC Schools Broadcasts to look into the possibility of establishing a school's broadcasting service in Nigeria.

EDUCATIONAL BROADCASTING IN SWAZILAND

A.T. Tembe
Director of Swaziland Broadcasting
& Information Services (S.B.I.S.)

The Swaziland Broadcasting Service (SBS) plays a significant role of informing, entertaining and educating the Swazi Nation.

Our broadcast house is divided into two main sections; SBS One and SBS Two. SBS One broadcasts all programmes in the mother language of the people of Swaziland while SBS Two, popularly known as the English Service of Radio Swaziland, caters to the country's English-speaking community. It is through this Channel that our Schools Radio Programmes were broadcast in English.

Immediately after Swaziland gained her independence in 1968 His Majesty's government found it necessary to build more Schools, train more teachers, and to use radio as a supplementary tool that could be used by classroom teachers and their pupils.

With this view in mind, the government set up the following objectives:

- (a) To support the existing Primary, Secondary and High School Curriculum in subject areas of Science, Geography, History, Agriculture, Home Economics, English Language, SiSwati Language and Religious Knowledge, among others.
- (b) To increase the general education and knowledge of the public in the fields of Health, Public Safety, Drug Abuse and Technology.
- (c) To impart to students the correct way to pronounce English words.
- (d) To dramatize both English and SiSwati literature on radio in order to give students a vivid picture of a play.
- (e) To impart to students educational material that would encourage them to adhere to their own culture and norms.
- (f) To support in-service and pre-service teacher education programmes.
- (g) To support the Swaziland National Correspondence College by producing and broadcasting its programmes.

Immediate Objectives:

- (a) To set up the mechanism to facilitate the coordination of Radio Schools Broadcasts production.
- (b) To give formal training to in-service personnel in Educational Radio Broadcast production techniques.
- (c) To use radio as a mechanism for improving students' performance in the formal and non-formal education sectors.
- (d) To obtain relevant educational programmes from other countries and organizations, e.g., Lesotho, Kenya, Zimbabwe, the UK and UNESCO.

The Educational Unit of Radio Swaziland, which was suspended in 1986, (reasons to be explained later) used to broadcast lessons from eight subjects: Science, Geography, History, Agriculture, Home Economics, English Language, SiSwati and Religious Knowledge.

The Unit used to broadcast lessons four hours a day, the length of each lesson being 15 minutes. The total broadcast time was 20 hours per week. These hours were solely devoted to the schools broadcasts, excluding the 30-minute daily broadcasts devoted to the Correspondence College. The Unit used to broadcast lessons to an audience of over 60,000 pupils throughout the country.

RESULTS OF EVALUATION:

The Unit used to send evaluation forms to all the Schools, which teachers were expected to fill out and send back to the Unit. However, the feedback was not excellent since some class teachers were not keen enough to fill out the forms. However, the overall assessment indicated that schools were keen to use the radio lessons. This was shown by their visits to the Unit to obtain teachers' notes and new time tables for the following term.

REASONS FOR THE SUSPENSION OF THE UNIT:

Although the Educational Broadcasting Unit had existed for some time, lack of coordination between the Ministry of Education and the Swaziland Broadcasting Service and the failure at the time to define clear objectives led to a poorly administered and largely non-productive educational broadcasting service. Poor transmission facilities and inadequate studios affected the correct functioning of the Unit.

PLANS FOR THE FUTURE:

Late last year, His Majesty's government and the government of the United States jointly signed an agreement through USAID, whereby the Ministry of Education will get financial and material assistance to meet its educational goals. The Ministry wants to strengthen the teaching of English in schools, beginning from grade one and up.

Since English is the medium of instruction in Swazi Schools from grade three onwards, its effective teaching is important to the quality and efficiency of the educational system. However, many Swazi educators are concerned about poor performance in English.

The Ministry of Education has identified weakness in repetition and drop-out rates.

Draft Ministry of Education (MOE) plans for the nine-year Basic Programme focus on the need to strengthen student listening, speaking, reading and writing skills, and emphasize the importance of a strong foundation in oral English.

The Government, through the MOE, believes that radio and, in particular, interactive radio instruction (IRI), is one technology that has been successful in addressing such problems. IRI, which is still at a project stage in Swaziland, is geared towards delivering core instructional material to children through daily radio lessons approximately 20 to 30 minutes in length.

The lessons won't be merely supplementary or for enrichment. They will cover the entire syllabus while actively engaging the students in learning. IRI has been used successfully to teach English in Kenya and Lesotho, where Radio English resulted in significant performance gains and strong teacher support at minimum cost. IRI is a way to help teachers, even those with limited English language skills or inadequate instructional materials, to teach English more effectively.

Educational Broadcasting at Swaziland Broadcasting Service (SBS) was cancelled in 1986 due to a serious lack of coordination with the MOE, compounded by outdated programmes, limited facilities and poor communication with the schools.

However, the MOE intends to establish its own Educational Media Services (EMS) following successful examples of such institutions in other African Countries. But funds have yet to be allocated for the necessary facilities.

A renewed collaboration between the MCE and SBS, therefore, could be an important first step towards the EMS goal, while providing immediate support to primary schools through IRI.

SBS has a suitable studio which, if equipped with donor support, could be used full-time by MOE for producing instructional radio programmes. Medium-wave transmission quality has been improved recently, working at half power. It is anticipated that very soon it will work at full power (at 100kws).

There is consensus at MOE and SBS that the actual content of Schools Broadcasts should be the responsibility of the experts at the National Curriculum Centre (NCC).

In the Educational Policy, Management and Technology project (EPMT), Radio English can contribute to improved English fluency, improved instruction and test scores, and reduced repetition and dropout rates.

The Ministry of Education and USAID have made the following recommendations:

1. That preparatory studies should be carried out as soon as possible to determine whether Radio English should be one component of EPMT.
2. That these preparatory studies should include a two-month pre-test early in 1990 to determine the adaptability of the Lesotho Radio English materials to Swaziland.
3. That if the preparatory phase proves successful, the EPMT contract should be amended to support continued investigation of Radio English. In this case, the following recommendations would also obtain.
4. That a pilot test should be carried out in Grade 1 during 1991 to confirm the effectiveness of the adaptation of Radio English programmes.
5. That if the pilot test is successful, the method should be extended to Grade 2 in 1992 and Grade 3 in 1993.
6. That the scripts and print materials should be prepared at NCC, and NCC curriculum officers be in charge of Radio English lessons production.

HISTORICAL BACKGROUND OF EDUCATIONAL RADIO PROGRAMMES IN TANZANIA

Mpumilwa Leonard Z.
Head of Primary School Broadcasts,
Ministry of Education
Dar es Salaam

Ngailo John L.
Senior Resident Tutor
Institute of Adult Education
Dar es Salaam

Mass education has been supported by the broadcasting medium since the first broadcasting scheme launched in 1951. But perhaps the crucial broadcasting development was affected in 1965, two years before the Arusha Declaration, when the broadcasting medium was assigned a specific role to play in the development of the country. Broadcasting was given the responsibility of promoting the development of Socialism and Self-reliance in the country.

Out of the TBC emerged Radio Tanzanian Dar es Salaam (RTD), which became part of the Ministry of Information and Broadcasting. This was an important political development in the life of the media in the country. Then the media came under the control and direction of a sub-committee of the party in order to educate the large population.

Government Ministries, Parastatals and Radio Tanzania jointly formed a broadcasting committee to coordinate all mass education broadcasts and prepare better programmes. The committee meets every after 3 months to go through various programme time-tables. Also, it is during this time when the Education Department (RTD) provides basic technology and communication skills to broadcasters from other organizations.

When considering the status of educational broadcasting in Tanzania, it is proper to take a wide view of the process of education. Formal education aimed at academic attainment is just one of a number of parts which make up an integrative whole. In this broader context such ideas as non-formal, community and vocational education are important. Together these many different ideas form the combination known as life-long education: a continuing process of learning and self-development that goes outside the classroom and beyond the school. Radio programmers in support of this process aim broadly at producing more productive, more informed, more contented members of society.

There are a number of classes of radio programmes that may be gathered beneath the generalization education.

- a) Pre-school for young children entering the elementary school system the following year (or thereabouts). Particularly those who attend kindergarten schools.

There is a weekly 30 min. programme (Mother and Child, Mama na Mwana) run by the Ministry of Information, Radio Tanzania Directorate. For the pupils in Primary Schools, apart from school broadcasts, have a half hour documentary programme (Our Children - Watoto Wetu), which highlights events in particular school every Sunday. (The programme includes a short history of a school, various economic activities in that school, songs, stories, etc.) This programme is run by the Ministry of Information - Radio Tanzania Directorate.

These programmes mainly train listening skills and assist in preparing children for school.

- b) School: Formal education radio programmes are designed to supplement and support classroom teaching. The programmes are for Primary School level, Secondary School and Teacher Education - Run by the Ministry of Education.
- c) Non-Formal: Educational Radio Programmes aim at creating informed population by providing a range of views, covering a variety of subjects, providing motivation and conscientize the mass on certain issues or needs.

- (i) Vocational programmes packages for people in specific occupational groups: e.g. Teachers. The programme "CALLING ALL TEACHERS" 30 min.

Programme twice a week; run by the Ministry of Education. Teacher Education Directorate, and the Teacher of Teachers, a 15 min. programme, run by the Ministry of Education Adult Education Directorate.

- (ii) Extension Services: (Mass Education) These programmes support the work of government departments and agencies, companies especially those in direct contact with the people. In this category are programmes related to:

- Agriculture. Run by the Ministry of Agriculture.

- Cooperatives. Run by the cooperative (WASHIRIKA) union of tanzania; Moshi Cooperative college.
- "Forestry." Run by the Ministry of Natural Resource - Forestry Directorate.
- "Poor Man's Weapon" run by the Party (COM) (Fimbo ya Mnyonge).
- Ideological College: This is a political programme aimed at increasing the political consciousness of the masses.
- The World of Workers - run by Tanzania workers union. (JUWATA) (DUNIA YA MFANYAKAZI)

EDUCATIONAL RADIO PROGRAMMES IN SCHOOL AND TEACHER TRAINING

- 1.1 Educational broadcasting (schools broadcasts) began in 1954 and were first directed to Middle Schools only. However, two years later they were extended to Secondary Schools.
- 1.2 From 1954 to 1967, schools broadcasts were carried out by the then TBC and later (1965) by Radio Tanzania Dar es Salaam (RTD).
 - 1.2.1 Under this system the Ministry of Information was responsible for educational broadcasts. As for the Ministry of Education, its role was to advise on subjects to be taught, the content to be covered and so on. And it was towards this end that two educational officers from the Ministry of Education were stationed at Radio Tanzania Dar es Salaam (RTD).
- 1.3 In 1973, however, the Ministry of Education was entrusted with the responsibility of running Educational Radio Programmes. This was because of the following reasons.-
 - 1.3.1 The period between 1973 - 1975 witnessed a big set-back in educational broadcasts (chiefly owing to the departure of B.B.C. experts in Educational Broadcasts. Hence leaving a big work load to RTD).
 - 1.3.2 Frequent misunderstandings between the Ministry of Education and RTD sometimes led to temporary hosting of educational radio programmes.

- 1.3.3 There was a general feeling that the Ministry of Education should be responsible for schools broadcasts since they played an important part in the whole educational system.
- 1.4 After some consultations, a joint meeting between the Ministry of Education and Radio Tanzania took place on 13/1/1977 to discuss the running of future educational programmes (schools broadcasts).
 - 1.4.1 It was decided that from then on the Ministry of Education should be responsible for the preparation of Educational Programmes, RTD would facilitate the recording and airing of the programmes.
 - 1.4.2 The Ministry of Education was also entrusted with other tasks such as writing, reading scripts for radio programmes, carrying out research and evaluation of the programmes, preparation of support materials such as timetables, pamphlets and meeting all the costs.
 - 1.4.3 There should be frequent meetings (twice a year) of the major and sub-committees of the Ministry of Education, the Institute of Education and RTD.
- 1.5 To implement all these, the Ministry of Education recruited local teachers to man the radio section which was established in 1979.
- 1.6 Teachers who were selected reported for work in March 1979. These teachers also underwent a residential three week course in Radio Production conducted by B.B.C. expert Mr. Robert Beaumont.

A. OBJECTIVES OF PROGRAMMES

To assist in the dissemination of education to various levels of the education system where there is a lack of highly qualified teachers and adequate teaching materials.

B. NUMBER AND DESCRIPTION OF COURSES

Every year we broadcast 480 programmes of Kiswahili, Science, History, Political Education, Geography and Home Economics for primary schools.

Then we have 240 programmes of Kiswahili, English Literature, Agriculture, Commerce, Economics, History, Geography and Political Education for secondary schools; and 96 programmes of Kiswahili, Science, English, Political Education: Mathematics (Methodology) and History for student teachers in colleges. (Teacher Training).

We also broadcast 52 programmes yearly under the weekly programme "Calling all Teachers" to all the teachers in the field informing them of educational events, new methods of teaching various subjects, and promoting their academic knowledge. Most of these programmes are talks prepared by experienced teachers and teacher trainers. These are often better presented as interviews. Then we have demonstration lessons recorded in actual or simulated classroom conditions with children, and informative inserts to draw attention to new classroom topics, and how to improve classroom techniques in such fields as making audio-visual aids and using school broadcasts - in classes.

C. THE ROLE OF RADIO PROGRAMMES

The role is of two folds: supplementary and enriching. The programmes play a supplementary role where schools (primary schools) have enough teachers and teaching materials. For those schools which lack enough teachers and adequate teaching materials, the programmes have an enriching role. For teacher training the radio programmes support and enrich the training.

D. HOURS OF BROADCASTS

Primary school and student teachers' broadcasts are on air for two hours daily - five days a week - Monday to Friday, while secondary school broadcasts are on air for one hour a day, five days a week (Monday to Friday).

"Calling all Teachers" is a half hour programme and repeated once a week all the year round.

A term has 12 weeks, and in a year we have two broadcast terms; thus 24 weeks of schools broadcasting per year.

E. AUDIENCE/COVERAGE

(i) PRIMARY SCHOOLS:

A total of 10,428 primary schools (1989)
Schools with radios - 3,096: thus 30%

(ii) SECONDARY SCHOOLS:

a) Public Secondary Schools	124
b) Private Secondary Schools	<u>181</u>
A total of	315 schools
Schools with Radios - 174:	thus 55%.

(iii) TEACHERS' COLLEGES:

There are 41 colleges in Tanzania mainland
Teachers' colleges with radios are 41; that is 100%

F. RESULTS OF EVALUATIONS - (1989)

(i) PRIMARY SCHOOLS:

Of 3,096 primary schools with radios (ref. E(i) Audience/Coverage).

2,181 primary schools listen to broadcasts. This is about 70.4%.

The remaining schools (29.6%) do not listen to broadcasts due to:

- a) Lack of/inability to buy batteries = 17.4%
- b) Inability to merge the two timetables 9.3%
(radio and school)
- c) Radios need servicing 0.3%
- d) Poor reception 2.6%

(ii) SECONDARY SCHOOLS:

Of 174 secondary schools with radios - 52 schools listen to broadcasts. This is 29.9%.

The remaining 70.1% do not listen to broadcasts due to the following reasons:

- a) Problems to merge the two (radio and schools) timetables - 46.6%
- b) Lack of batteries (power) 8.7%
- c) Negative attitude 10.8%
- d) Poor reception 4.0%

(iii) TEACHERS' COLLEGES:

Of the 41 colleges with radios 24 colleges listen to broadcasts. This is 51.2%.

The remaining colleges 17; thus 48.8%, do not listen due to various reasons such as:

- a) Problems to merge radio and college timetables- 20.8%
- b) Negative attitude 23.2%
- c) Poor reception 4.8%

G. OVERALL ASSESSMENT

It is estimated that the quality of our broadcasts is about 57.3%. The main reason for this is due to:

- a) Undertrained educational broadcasts personnel (resulting in poor script writing, editing, programme format design, etc.).

- b) Lack of enough studio recording facilities. This results in inadequate time for recording and hence programmes recorded too quickly.
- c) Lack of views and opinions from the target audience to enable producers (broadcasts personnel) revise the programmes accordingly.

H. PLANS FOR THE FUTURE

- a) Expansion and further training of the schools broadcasts' personnel.
- b) To persuade District Authorities (who own and administer primary schools) to buy radio cassettes; compact cassettes and batteries to promote programmes listening.
- c) Persuade District Authorities to install electricity to primary schools in urban areas and other sources of power in rural across, e.g. solar energy.
- d) Establishing a studio for recording and preparation of all schools broadcasts.

I. ASSISTANCE THROUGH THE CONFERENCE

Experiences from fellow participants will enable us to improve our broadcasting activities; e.g. Radio projects - like the Kenyan RLAP (Radio Language Art Project).

RADIO MASS CAMPAIGN IN TANZANIA

The Tanzanian Background History: the Radio Learning Campaign is a large scale, educational project/programme which is run over a relatively short period of time. Such programme is directed at organized study groups of people who are learners. These groups are usually led by trained study group leaders (SGL) who listen to the series of Radio Programmes, read study materials and then discuss the issues which are presented. In some cases, groups send their views back to the campaign organizers, organize collective actions such as latrine construction and planting of trees, etc.

Organizing a campaign of this nature draws on different kinds of resources of several government Ministries and parastatal organizations, and requires an adequate collaborative interagency approach. A radio mass campaign needs a very high priority in terms of resources and allocation of staff time.

An educational radio campaign was first started in Tanzania in the late 1960's, and the strategy was later adopted for use in other countries such as Botswana. Since then Tanzania Radio mass campaigns have been used by Tanzanian Government to put into practice the policy of Mass Participation in development. The strong political support for adult education and the extensive party network made Tanzania's work successful in mobilizing thousands of campaign study groups all over the country.

The Tanzanian educational Radio Campaigns first started with two known experiments that rose independently. One of these experiments was initiated by the Moshi Cooperative Education College (CEC) and was aimed at educating members on pertinent ideas and issues of cooperative movement. Groups registered were about 400 in total.

Another experiment was a more modest effort sponsored by Institute of Adult Education took place in Southern region (Mbeya) of Tanzania. Fifteen experimental study groups were selected from the members of the Adult Education Association Network. These groups listen to the Radio Programmes. Then they used study materials on Civics and Agriculture. It was on these modest beginnings that strategy for Educational Radio Campaign involving large mass participation was established. Over the past years several Radio Campaigns have been organized in Tanzania, they include:

NATIONAL CAMPAIGNS

YEAR	CAMPAIGNS	OBJECTIVE	PARTICIPANTS
1969	To plan is to Choose	Identify problems and select methods for implementation according to 2nd Five Year Plan (1969-1974)	3,000
1970	The Choice is Yours	Educate people how to choose the best leaders	4,000
1971	Time for Rejoicing	To prepare the people for the 10th Independence Anniversary	20,000
1973	Man is Health	To educate the people on Preventive methods on Diseases	2,000,000

1975	Food is Life	To educate the mass on Balanced Diet	4,000,000
1980	Forests are Wealth	To educate the mass on the importance of Forests	264,373

RADIO: In order to emphasize education on the issues mentioned above, 24 radio programmes were prepared and aired. These programmes of fifteen minutes each were aired twice a week simultaneously with group discussions which were held in villages.

FORESTS ARE WEALTH CAMPAIGN

- 1.0 This campaign was run by the Institute of Adult Education in collaboration with the Ministry of Natural Resources Forestry Directorate. The campaign was implemented from 1980/81 after having been prepared for one year.
- 1.1 Environmental problems are not an issue Tanzania alone; it is a world wide problem. Therefore Tanzania decided to run the campaign because the country is hard hit by deforestation. First priority was given to the eight most affected regions: Arusha, Mara, Mwanza, Shinyanga, Kigona, Singida, Dodoma and Tabora.
- 1.2 The first target population was to the badly hit regions mentioned above; then the programme was for the whole nation - namely Tanzania Mainland and Island.
- 1.3 Five hundred thousand textbooks were distributed to campaign participants; the Study Group Leaders' Guide Booklets 17,000. Khangas and Kitengo clothes, posters, 82,240 divided among three themes--The importance of forests and trees, 6,400 copies; Forests are Wealth 75,000 copies; plant trees 840 copies saving for publicity purpose.
- 1.4 For efficient publicity the radio, newspapers, film show, different types of songs and poems were used.

2.0 CAMPAIGN PLANNING FACILITATORS

- 2.1 National Coordinators Committee
In order to facilitate good planning of the campaign different committees were formed. These committees were the National CoOrdinating Committee which included members from different ministries and parastatal organizations who met once every month.

- 2.2 The Campaign Executive Committee which met twice a month.
- 2.3 The Materials and Transport Sub-Committee charged with overseeing the day to day implementation of the campaign, e.g. preparation of campaign materials.
- 2.4 THE SMALL PUBLICITY AND TRAINING SUB-COMMITTEE was charged with the task of making the campaign known, planning seminars and carrying out the actual training of the seminars. Levels of seminars were from National Zonal, District, Ward and Village level.
- 2.5 THE SMALL EVALUATION SUB-COMMITTEE was charged with the evaluation of all aspects of the forest campaign. Three types of valuations were done; Pre-campaign survey of the existing situation; formative evaluation and summative evaluation.
- 2.6 THE SMALL PLANNING AND FINANCE COMMITTEE was charged with the process of planning and was answerable for any accountability of campaign's expenditure. Matters like manpower requirements, mobilizing the masses by raising awareness on the importance of conservation of forests and massive tree-planting the committee had to handle. It had also to coordinate the off-flow of information of the campaign.

3.0 RADIO PROGRAMMES

24 Radio Programmes were prepared which matched the chapters in the participants textbook. The radio programmes explained and elaborated in simple language the topics in the participants textbooks. The programmes were used in answering participants questions and discussing important issues in implementation of the campaign. (See Appendix A-D)

4.0 STUDY GROUPS

The purpose of the village study groups was to give the villagers the opportunity to learn, discuss and contribute ideas towards the improvement of the village environment with particular emphasis on afforestation. The study groups followed the process of listening to the radio programmes, reading the relevant chapters in the textbook and finally discussing and deliberating on what is to be done in their particular village: The suggested topics are listed in Appendix E.

5.0 EVALUATION

Evaluation was taken into consideration right from the beginning. The experience has shown that evaluation of any

particular programme/project is very important; hence, the evaluation works as "leader or a guide for the whole process." Therefore, the evaluation had to evaluate things connected with the campaign such as the quality of the campaign materials, the training seminars, and the quality of radio programmes.

Therefore three evaluations were done. The first one was done before the campaign which was a fact finding. The second one was done during the campaign in order to trace how the campaign was being implemented to allow campaign planners and implementers to assess progress and obstacles so that mistakes could be corrected. The summative evaluation was done at the end of the campaign. This evaluation showed the nation how the campaign was implemented causes of success and failures that happened during the campaign, participation of the people, problems occurred, etc. The evaluation tried to show the true picture of the whole campaign and to suggest how the follow-up campaign could be done.

6.0 PROBLEMS

Problems were divided into two parts national and regional. National problems included a shortage of seedlings which delayed the initial correct time of planting. There was a lack of communication between the planners of the campaign and the regional implementing authorities. This compelled the regions to depend solely on their regional annual plans and target. Another short-fall was that the rainy period for planting was short, hence in some areas seedlings were left in nurseries for a long period.

The seedlings were not delivered in time due to lack of transport - either failure for spare parts or fuel and bad roads. Many regions did not attain these targets for seedlings because of lack of polythene tubes.

- Smooth follow-up was affected by shortage of qualified personnel and transport.
- The transfer of experts was another set back nationally.
- Insects destroyed planted trees.
- In some regions the outbreak of Cholera affected the distribution of tree seedlings.
- Forest fires remained a major problem in some regions.
- Tabora Region was heavily affected by the preparations of May Day Celebrations - because the celebrations were held at Tabora Nationally.
- In some regions such as Tabora and Mara, village leaders had very minimum knowledge of forestry.
- Traditional beliefs hindered the acceptance of some kind of species (e.g. fichus) in the Mwanza Region.

7.0 COSTS.

Educating adults by means of the educational radio campaign method is not expensive. That's why in Tanzania this technique is being used from time to time.

Forests are Wealth Campaign money. If the campaign was to run in traditional classrooms the costs would have been a hundred times more. The whole budget of the campaign was Ts. 6,466,000 and was used for the production of materials, the preparation of seedlings, and for planting and transportation. The target population was approximately 20 million people.

CONCLUSION: The Tanzanian experience has shown the nation that educating people using the technique of Educational Radio Campaigns has proved to be very effective. It is popular and liked by both organizers and campaign implementers. This technique can educate many people in a short period using very minimum resources compared to the other methods such as face to face teaching. It has proven to be very inexpensive compared to classroom programmes. One thing to be taken into consideration is that the Radio Mass Campaign is very technical, so it needs very careful planning and organization.

APPENDIX A

APPENDIX IIIA: RADIO PROGRAMMES FOR FORESTS ARE WEALTH CAMPAIGN
15 DECEMBER 1980 - 26 MAY, 1981

WEEK	PROGRAMME	OBJECTIVE	DAY	TIME	DATE
I	Dangers of Deforestation	Educate the people on reason behind the forests and possible	Monday	4.15-4.30 pm	15.12.80
			Tuesday	4.30-4.45 pm	16.12.80
II	Tangible benefits of forests	Educate the people on that obvious benefits which could be obtained from the forests, e.g. firewood	Monday	4.15-4.30 pm	22.12.80
			Tuesday	4.30-4.45 pm	23.12.80
III	Intangible benefits of forests	Educate the people on the benefits of forests which cannot be obtained easily and are not obvious (e.g. rain influence)	Monday	4.15-4.30 pm	29.12.80
			Tuesday	4.30-4.45 pm	30.12.80
IV	Objectives of having forests	Educate the people on the different techniques for maintaining and developing different types of forests according to the purpose of that forest; for instance a forest for timber production is maintained differently from that for firewood	Monday	4.15-4.30 pm	5.1.81
			Tuesday	4.30-4.45 pm	6.1.81
V	Natural forests & plantation forests	Educate the people about the differences between natural forests and plantation forest and their importance	Monday	4.15-4.30 pm	12.1.81
			Tuesday	4.30-4.45 pm	13.1.81
VI	Types of tree species in natural forests	Educate the people on different types of trees found in natural forests, their importance and how they are looked after	Monday	4.15-4.30 pm	19.1.81
			Tuesday	4.30-4.45 pm	20.1.81

APPENDIX A, continued

WEEK	PROGRAMME	OBJECTIVE	DAY	TIME	DATE
VII	Type of tree species	Educate the people on the different types of trees found in plantation forest, their tending techniques and importance	Monday	4.15-4.30 pm	26.1.81
			Tuesday	4.30-4.45 pm	27.1.81

APPENDIX B

WEEK	PROGRAMME	OBJECTIVE	DAY	TIME	DATE
VIII	Types of trees for afforestation	Educate the people on suitable tree species for afforestation and their respective environments	Monday	4.15-4.30 pm	2.2.81
			Tuesday	4.30-4.45 pm	3.2.81
IX	Seed preparation	Educate the people on how to prepare different types of seeds, e.g. Eucalyptus seed	Monday	4.15-4.30 pm	9.2.81
X	Seedling nursery	Educate the people on how to choose the best location of a nursery and how to prepare it	Monday	4.15-4.30 pm	16.2.81
			Tuesday	4.30-4.45 pm	17.2.81
XI	Seedbed preparation	Educate the people on how to prepare a seedbed for raising seedlings	Monday	4.15-4.30 pm	23.2.81
			Tuesday	4.30-4.45 pm	24.2.81
XII	Sowing seeds	Educate the people on the techniques of sowing seeds	Monday	4.15-4.30 pm	2.3.81
			Tuesday	4.30-4.45 pm	3.3.81
XIII	Suitable soil-type	Educate the people on how to identify and prepare suitable soil mixture for a nursery and the ultimate importance of the soil	Monday	4.15-4.30 pm	9.3.81
			Tuesday	4.30-4.45 pm	10.3.81
XIV	Transplanting seedlings	Educate the people about the techniques of transplanting seedlings and their importance	Monday	4.15-4.30 pm	16.3.81
			Tuesday	4.30-4.45 pm	17.3.81
XV	Nursing seedlings	Educate the people on how to take care of their nurseries, e.g. root outting, watering, etc.	Monday	4.15-4.30 pm	23.3.81
			Tuesday	4.30-4.45 pm	24.3.81

APPENDIX B, continued

WEEK	PROGRAMME	OBJECTIVE	DAY	TIME	DATE
XVI	Land preparation for planting trees	Educate the people on how to prepare the land ready for planting trees	Monday	4.15-4.30 pm	30.3.81
			Tuesday	4.30-4.45 pm	31.3.81
XVII	Tending of trees	Educate the people the techniques of tending the trees in the field e.g. Thinning Weeding and pruning	Monday	4.15-4.30 pm	6.4.81
			Tuesday	4.30-4.45 pm	7.4.81
XVIII	Important precautions to ensure continuous forest benefits	Educate the people on the necessary precaution to be taken in order to ensure permanent availability of forest produce and benefits	Monday	4.15-4.30 pm	13.4.81
			Tuesday	4.30-4.45 pm	14.4.81

APPENDIX C

WEEK	PROGRAMME	OBJECTIVE	DAY	TIME	DATE
XIX	Planting seedlings	Educate the people on how to plant the seedlings in the fields	Monday	4.15-4.30 pm	20.4.81
			Tuesday	4.30-4.45 pm	21.4.81
XX	Utilization of forest produce	Educate the people on harvesting techniques and best utilization of the produce	Monday	4.15-4.30 pm	27.4.81
			Tuesday	4.30-4.45 pm	28.4.81
XXI	Dangers of fire and livestock	Educate the people on dangers caused by fire and grazing livestock in a forest and possible preventive measures	Monday	4.15-4.30 pm	4.5.81
			Tuesday	4.30-4.45 pm	5.5.81
XXII	Tree diseases	Educate the people on the techniques of identifying different tree diseases and how to prevent them	Monday	4.15-4.30 pm	11.5.81
			Tuesday	4.30-4.45 pm	12.5.81
XXIII	Forest laws and rules	Educate the people on the laws and rules of forestry and their applications in developing the forestry sector and country as a whole	Monday	4.15-4.30 pm	18.5.81
			Tuesday	4.30-4.45 pm	19.5.81
XXIV	Forest by laws	Educate the people on the need of formulating forest by laws in their respective districts and villages	Monday	4.15-4.30 pm	25.5.81
			Tuesday	4.30-4.45 pm	26.5.81

NB: These programmes should fulfill the following aims in the Forests are Wealth campaign.

1. To raise the awareness of people as far as forest depletion problem is concerned in this country.
2. To encourage them to plant trees in their local environment.
3. To teach them the techniques and education of managing the existing forests and to establish new woodlots.

APPENDIX C, continued

- To elaborate in simple language the contents in the textbook "Misitu ni Mali"
 - To supplement the contents of the textbook.
4. To give the people an opportunity to learn from the experiences of others through radio interviews.
 5. To monitor the progress of the learning experience.

APPENDIX D

EDUCATION BROADCASTS
RADIO PROGRAMMES

PROGRAMME	OBJECTIVE	TIME	REMEDY
1. THE MOTHER AND CHILD	Preparing children for school	30x2min	The Ministry of information
2. OUR CHILDREN	Preparing children for school	30x2min	Directorate Radio Tanzania - Ministry of Information
3. SCHOOL PROGRAMMES	Supplement and support classroom teachings	3 1/2 hrs	The Ministry of Education - Primary and Secondary Directorates
TEACHER TRAINING	Support in enrich the training	20 min	Directorate of Teacher Education
4. CALLING ALL TEACHERS	To improve job performance	30minx2	The Ministry of Education Teacher Education Directorate
5. THE TEACHER OF TEACHERS	To broaden and consolidate experiences in teaching literacy classes	15minx2	The Ministry of Education Directorate of Adult Education
6. MODERN FARMING	To educate and motivate farmers to adapt better methods of farming	15minx2	Ministry of Agriculture Directorate of Crops
7. CO-OPERATIVES	To educate and motivate rural co-operative members	15minx2	Run by the Co-operative Union of Tanzania Moshi Co-operative College
8. FORESTRY IS LIFE	To mobilize and create the awareness to the mass of forestation	15minx2	Run by the Ministry of Forestry Forestry Directorate
9. POOR MAN'S WEAPON	Increasing the political consciousness of the masses	30minx2	The Party (COM) Ideological College

APPENDIX D, continued

PROGRAMME	OBJECTIVE	TIME	REMEDY
10. THE WORLD OF WORKERS	Rights of the workers and general education	15minx2	Tanzania Workers Union (JUWATA)
11. FORESTS ARE WEALTH	To educate the people on forest	15minx2	Ministry of Agriculture and Ministry of Education: Directorates of Forestry and Adult Education jointly

APPENDIX E

TABLE 4: TOPICS FOR DISCUSSION BY STUDY GROUP

SESSION NO.	TOPIC
1	Dangers of forests depletion in the country
2	Tangible benefits of forests
3	Intangible benefits of forests
4	The purpose of having forests in the country
5	Natural forests and plantation forests
6	Tree species in natural forests
7	Tree species for plantation forests
8	Tree species for planting
9	Preparation of seeds
10	The seedling nursery
11	Preparation of seedbed
12	Sowing seeds
13	Suitable soil type
14	Transplanting seedlings
15	Tending your seedlings
16	Land preparation
17	Field planting
18	Tending your trees
19	Precautions in order to get forest benefits perpetuity
20	Harvesting trees (logging)
21	Dangers of fire and livestock
22	Better use of reserved and unreserved forests
23	Tree diseases
24	Ordinances and by-laws protecting forests

BIBLIOGRAPHY

- 1986 - Ministry of Education
Annual Report on School Broadcasts
- Final Report on "Forests are Wealth" Campaign
- Barrett, Hugh "Tanzania Planning a National Mass Adult Education Campaign
- Hall, B.L. Wakati was Furacha: An Evaluation of a Radio Study Group Campaign
- Hall Budd L and Tikambona, Mtu ni Afya: An Evaluation of the 1973 Mass Health Education Campaign in Tanzania
- Ohliger, J. Listening Groups: Mass Media in Adult Education
- McAnany, Emile G. Radio's Role in Development: Five Strategies of Use
- Ohliger, J. Listening Groups: Mass Media in Adult Education
- John L. Ngailo - Study Group Leader's Guide

EDUCATIONAL RADIO PROGRAMMES IN UGANDA

Mary Nyamusana
AG. Head, Education Radio & Television
Ministry of Education

Formal education in Uganda is the sole responsibility of the Ministry of Education which prepares the curriculum for all levels of Primary and Secondary education. The Education Policy Review Commission Report published in January, 1989, recommended that non-formal educational programmes should also be put under the umbrella of the Ministry of Education.

The Ministry of Information and Broadcasting in Uganda is responsible for all technical facilities, staff, and allocation of air time. All educational programmes, whether "In school" or "Non-Formal," are therefore recorded and transmitted using facilities and staff of Radio Uganda.

1. IN SCHOOL USE

Objectives of the Programme

Educational Radio Programmes for school use in Uganda are broadcast by the Education Radio and Television Section, which is a Unit of the Inspectorate, Ministry of Education Headquarters. The broader objective of the unit is to educate school pupils in primary and secondary schools. Educational Radio broadcasts started as far back as 1963, soon after independence. In Uganda, the majority of schools, both primary and secondary, are located in rural areas. There is a serious shortage of trained teachers and apparatus, as well as audio-visual and printed educational materials. Radio offers a reasonable answer to most of these problems.

A. Summary of Educational Radio's objectives

- (i) To provide basic audio-visual aids to primary and secondary schools in order to improve the quality of teaching/learning.
- (ii) To bring into the classroom the experience that would otherwise not be possible because of limited resources.
- (iii) Language teaching objectives:
 - (a) To improve English language teaching.
 - (b) To improve pupils' English through listening to good speakers of the language.

- (c) To improve pupils' written English through supplementary exposure to the language.
- (d) To tackle the most serious weakness in the teaching of primary English, which is the imparting of oral/aural skills.

B. Number and description of courses

(i) Lower Primary

There are four 15-minute lessons on language and oral work, as well as drills of language items.

Two lessons of story time - mainly folk stories based on African Culture.

(ii) Upper Primary

Four language lessons in structural and sentence patterns from the course book, "The New Oxford Book" and "The Nile English Course."

Two lessons on "Listening for Pleasure," which is basically the telling of traditional and foreign folk tales.

Four Science lessons covering topics laid down in the school curriculum. For example: Air, Energy, and Light. Relevant experiments are carried out.

(iii) Secondary Schools

Subjects taught at the Ordinary and Advanced Levels include Literature in English, and Literature in Luganda, where set books in the syllabus are covered. In addition, History, Geography, Science, and General Education are also taught.

C. The role of the radio programme

In all the above programmes, emphasis is laid on the fact that these lessons are meant to supplement, enrich and reinforce classroom teaching and not to replace the teacher.

D. Hours of broadcasts per week

During each of the three eight-week terms, educational radio is allocated twenty-four slots per week; that is, six hours a week.

E. Audience/Coverage

The target audience is formal school pupils in both primary and secondary schools. It is estimated that about 30% of the intended target audience is technically in a position to receive the radio broadcasts.

F. Results of evaluation

Many schools do not make use of educational radio programmes. Research indicates that the examination classes such as Primary seven, Senior four and six, monitor the programmes and find them very useful in their revision work. There are several reasons why many schools do not use radio programmes.

- (i) Poor or no reception;
- (ii) Lack of radio sets in schools;
- (iii) The universal problem of time-tabling;
- (iv) Lack of transport for staff to handle feedback, monitoring, and evaluation;
- (v) Inadequate production and distribution of support learning/teaching materials such as charts, models and teachers' guide books and notes.

G. Overall assessment of quality

The overall quality of the programmes is good. The staff are trained teachers with classroom experience. The standard of the programme is appropriate.

H. Future plans

- (i) The broadcasting authority in Uganda is the Ministry of Information and Broadcasting. Attempts are being made to get recording equipment and a separate studio.
- (ii) The Ministry of Education should purchase a mass cassette recorder, blank cassettes and produce lessons for sale/hire to schools.
- (iii) Provision of radio sets and support materials to schools is a priority of the Ministry of Education.
- (iv) Efforts are being made to secure transport.

I. How can the Conference be of assistance to Ugandan educators

- (i) Participation in the conference will assist in learning from other countries' experiences. For example, is our audiences too wide? In order to be effective, should we limit our broadcasts to primary schools only?
- (ii) Exchange of ideas and finding solutions to problems such as inadequate air time, poor reception, and lack of recording facilities.
- (iii) Explore possibility of exchange of programmes.
- (iv) To identify and tap any outside assistance in terms of personnel and equipment.
- (v) Guidelines on how to identify, manage, and implement a Radio Learning Project.

2. TEACHER EDUCATION

Teacher education radio programmes are part of the In-School system. They are prepared by the Education Radio and Television Section of the Ministry of Education. The target audience is student teachers in Teacher Training Colleges, which include 96 grade III and 2 grade V National Teachers' Colleges. Each week there are:

- a) Four lessons on Methodology. For example: How to teach reading to infants through rhymes and songs
- b) Four lessons on Principles of Education. For example, teaching and learning, during which different topics are discussed.

The objectives of these programmes are three-fold:

- (i) to supplement instructional programmes in teacher training colleges;
- (ii) to expose the student teacher to carefully prepared radio lessons so as to assist them in lesson planning; and
- (iii) to make student teachers aware of educational radio programmes which they will be required to use/conduct in order to supplement classroom teaching.

Note: All other information in Sections C, D, F, and G in the School Use section refer to teacher education because both programmes are under the Education Radio and Television Section.

3. NON-FORMAL ADULT BASIC EDUCATION

At present, this type of radio education is offered by various organizations/agencies, ministries and institutions. The main characteristic is that they are not coordinated under a main umbrella body. However, the January, 1989, Report of the Education Policy Review Commission recommended that a Directorate of Non-Formal and Adult Education be set up in the Ministry of Education.

The Directorate will be responsible in the future for the planning, management, implementation and co-ordination of all Non-Formal educational activities in the country. This will streamline all such activities and thus eliminate the competition and repetition which characterizes the present system.

Radio Uganda is the sole broadcasting authority for educational radio programmes for Non-formal Adult Basic Education. The Ministry of Information and Broadcasting has a Directorate of Educational Broadcasting. The Rural and Farm Section in Radio Uganda handles educational programmes for the farmers, whose aim is to improve crop production and marketing. Other ministries are allocated slots for their educational programmes usually in the form of campaigns. The Ministry of Health is a case in point, with programmes dealing with maternal and child care.

The Center for Continuing Education (CCE), Makerere University, Kampala, merits mention among the institutions using Radio Uganda to broadcast educational programmes in Non-Formal Adult Basic Education. The Centre is allocated a 15-minute slot every Tuesday at 8:15 p.m. to broadcast a programme directed towards teachers and instructors of functional literacy programmes. The programme's objective is:

- (i) To attain some degree of literacy and numeracy;
- (ii) To acquire functional skills relevant to life in the community; and
- (iii) To improve and offer opportunities for continuing informal educational institutions.

The programme is directed to the 34 districts in the country. In order to be more effective, the Centre plans to ask for more time and also translate the programme into vernacular languages for the benefit of those in rural areas.

A. Objectives of the programmes

The general objectives of the Non-Formal Basic Adult Education broadcast by Radio Uganda and prepared by different institutions are:

- (i) To mobilize the masses in order to create an awareness of their environment;
- (ii) To improve national awareness;
- (iii) To educate, inform and entertain;
- (iv) To attain some degree of literacy and numeracy; and
- (v) To acquire functional skills relevant to life in the community.

B. Number and description of courses

There are various general courses and campaigns produced by different institutions.

C. Role of the programmes

To improve the quality of life by assisting Ugandans in using the environment for their own benefit.

D. Hours of broadcast per week

Radio Uganda is on air 124 hours a week and allocates slots to the institutions as appropriate. Radio Uganda hopes to have a separate channel for specifically broadcasting health programmes by mid-1990.

E. Audience/Coverage

General adult audience, particularly the women to whom health care programmes are directed, and rural farmers, for the purpose of farming programmes.

F. Results of evaluation

Radio Uganda plans to carry out an audience survey in the near future.

G. Overall assessment of quality

The programmes are popular and effective. However, some institutions find that the time slots are restrictive, which affects quality. Where programmes are not translated into vernaculars, the target audience is not catered to.

H. Plans for the future

Radio Uganda plans to maintain and rehabilitate the National Channel. This will ensure better quality transmissions. Four regional medium wave transmitters are being installed.

EDUCATIONAL RADIO IN ZAMBIA

M.P. Mulombe
Controller,
Educational Broadcasting Services

1. INTRODUCTION

The educational system in Zambia falls under the following main categories:

- (a) Primary Education: This is universal and runs for seven years, i.e., Grade 1-7 for ages 7 to 14 years. At the end of the 7 years there is a selection examination in six subjects - English, Mathematics, Science, Social Studies, Special paper 1 and Special paper 2. Religious Education and Local Zambian Languages are optional. Selection is to a very large extent dependent on the availability of places at the Junior Secondary School level.
- (b) Junior Secondary: (Grades 8 and 9). At the end of the two years pupils sit for a Junior Secondary School Leaving Certificate Examination. Those who fulfill conditions for entering Senior Secondary proceed to Grade 10. Here again the availability of places at Grade 10 is a major deciding factor.
- (c) Senior Secondary: (Grades 10-12). At this level successful pupils have an opportunity to enter tertiary institutions as well as the University. But for the majority of the pupils Grade 7 and 9 is the end of formal education.

2. BASIC EDUCATION

Although Universal Primary Education is yet to be achieved, Zambia has embarked on another plan known as the Nine Years Basic Education which runs from Grades 1 to 9. Parents are encouraged to turn some primary schools into Basic Schools in order to absorb Grade 7 school leavers who fail to enter normal Junior Secondary School due to lack of places. These schools, which are now mushrooming all over the country, must meet certain basic requirements before the Ministry can approve their opening.

Basic schools are still very few because of the unfavorable economic situation in Zambia. Some communities cannot afford to raise sufficient funds to put up new classroom blocks, labs and teachers' houses.

3. CONTINUING EDUCATION

One other way the problem of drop-outs is being resolved is through the system of continuing education. Continuing education is in three categories, namely:

- i. Evening classes;
- ii. Correspondence studies;
- iii. Open secondary classes (supervised study groups).

These three categories use printed lectures from the National Correspondence College. Individual students studying by correspondence are directly enrolled with the College, whereas those in evening classes or open secondary classes enroll with the centres or schools where such classes are conducted. Students in continuing education follow the same syllabus as those in regular junior secondary schools and the General Certificate of Education, GCE "O" level, at senior secondary level. Open secondary classes meet at either primary or secondary schools in the afternoons, using classrooms which are not in use and are supervised by a full-time qualified teacher.

Skills training courses are now being introduced in open secondary classes or continuing education centres.

4. TEACHER SUPPLY (STAFFING)

Although in some areas primary schools employ untrained teachers, Zambia has a sufficient number of trained teachers at both Primary and Junior Secondary levels. The problem is one of distribution. The shortage of teachers is at senior secondary level in subjects such as maths and science.

Another very serious problem, particularly at primary school level, is the lack of textbooks and other teaching materials. This adversely affects the quality of teaching, especially in rural areas.

There is also one National In-service College in Zambia where a small group of teachers go for in-service training for periods ranging from 3 to 9 months. The courses are intended to update teachers' professional skills. Because there are many teachers throughout Zambia, it takes a long time for some of them to get a chance to get in-service training.

5. EDUCATIONAL RADIO

(a) Objectives of the programmes:

- (i) To enhance the quality of teaching and learning, particularly in primary schools where classroom teaching is adversely affected due to lack of textbooks and other teaching materials.
- (ii) To help students in open secondary classes compete favorably with regular secondary schools for places at senior secondary level.
- (iii) To provide correspondence students with extra useful information to supplement printed lectures and information regarding their studies. The latter is done through newsreel.
- (iv) To provide teachers with up-to-date information on the teaching of subjects such as science, information on Curriculum Development, and on the teaching profession in general.

(b) Subject series:

- (i) Radio covers the following subjects for the upper primary level:
 - English
 - Science
 - Social Studies
 - Home Economics (Grades 7 only)
- (ii) For Junior Secondary (open secondary classes) level, the following subjects are taught:
 - English
 - Geography
 - History
 - Civics
 - Environmental Science
- (iii) At Senior Secondary or GCE "0" level the following subjects are broadcast:-
 - Economics
 - African History
 - Commonwealth History
 - English Language
 - Literature In English
 - A course in Careers is offered at both Junior and Senior secondary levels.

(iv) Teachers broadcasts include:

- Calling School Teachers
- Home Economics for Teachers
- Focus on Curriculum Development

(c) Role of the Radio Programmes:

Radio lessons are used as supplementary materials for correspondence students and teachers, for enrichment in primary schools, and for some core instruction in open secondary classes. A number of these programmes are accompanied by teachers' guides in the form of booklets containing background information, as well as instructions on how to use a radio lesson.

(d) Hours of Broadcasting per week:

There are approximately 19 hours of radio broadcasts devoted to formal educational programmes in Zambia per week. Morning broadcasts are for primary schools, afternoon ones for open secondary classes, and evening broadcasts for correspondence students and teachers.

Radio broadcasts usually coincide with the normal school calendar. There are 27 weeks of school radio broadcasts in the year. The programmes are 15 minutes long except for a few, which are 20 minutes long.

(e) Audience/Coverage:

Radio, unlike television, covers the whole country. There are around 3,000 Primary Schools and nearly 300 Secondary Schools in the country. There are also more than a hundred schools or centres where open secondary classes are conducted. But there are just under 2,000 radio receivers being used in schools.

Listenership is evenly spread out between rural and urban schools. Where schools experience the problems of poor reception or time-tabling, provision is made for them to borrow cassettes on which radio lessons are recorded. All radios have cassette-playing and recording facility.

(f) Evaluation:

Evaluation results indicate that schools experience security problems with regard to the keeping of radios. As the number of radios dwindle, the problems of sharing a radio among a number of classes increase. In some areas the reception is very poor, but teachers' guides, cassettes and flip-charts that accompany the programmes are in great demand by teachers.

(g) Overall Assessment of Quality:

In those schools where radio lessons are closely followed and from individual correspondence by students, teachers, and the general public, the quality of educational radio programmes is rated very highly.

(h) Plans for the Future:

Zambia intends to use radio at the lower primary level, using the interactive radio instruction method to teach core academic areas of English and Mathematics. There are also plans to start the University of the Air.

Zambia hopes to learn how other countries are using radio to improve the quality of teaching and learning in areas where resources are scarce, and also in resolving the problem of school drop-outs.

17/01/90

THE POSITION OF EDUCATIONAL RADIO IN ZIMBABWE

Dr. John Rwambiwa
Chairman, Department of Educational Technology
University of Zimbabwe

A BRIEF OUTLINE

As explained by our Honourable Minister of Education, Comrade Chung, who is both a politician, and an energetic and enthusiastic educationist, the aim of our government is to redress the imbalances in the provision of educational opportunities that existed during the many decades of colonial rule.

Currently, education in Zimbabwe is in a state of flux. Politically and socio-economically, education has a newly acquired priority in the nation's values. The majority of people who were previously under-privileged no longer view education as a static system; such a concept has been replaced by a new dynamism which is characterized by the change in political thinking.

The impetus for change is complex but it involves the interaction of several new pressures on the entire education system. These pressures include the rapid growth in enrollments in all sectors - primary, secondary and tertiary education, increased awareness of the intrinsic value of education and the more general availability of education in the community.

The pledge "Education for all" by our president, Comrade Mugabe, at independence, is very close to realization within this short decade of achieving self government by the majority. For example, the primary school population at Independence was just over 800,000 but to date it is well over 2,000,000, an increase of over 200%. The University and polytechnics have also had similar increases in their enrollments.

This deluge of enthusiastic learners in our schools and colleges was not paralleled by the number of manpower needed to teach them. The pupil/teacher ratio became and still is grotesque. This factor has the adverse consequence of a reduction in the quality of instruction provided.

As you heard from the Minister herself, the government's aim is not simply to educate large numbers but to render good quality education as well. Now, what is good quality education?

The definition given by the World Bank includes the concentration of materials or learning resources per student, and the efficiency with which these inputs are managed and structured within school and classrooms.

Two yardsticks are commonly used to describe educational quality. The first concerns the characteristics of the graduates. The second concerns the level of inputs in the educational process, such as teacher qualification, curriculum content, duration of studies, pedagogical materials used etc.

When the quality of education, according to either yard stick, is said to be low in developing countries, there is often an implicit or explicit comparison with the situation prevailing in the developed countries.

As a result of the above factors our independence was not a total blessing. The dearth in both human and material resources necessitated other alternative means such as the use of Radio.

Zimbabwe has a total of four radio channels:

- o Radio One has all its programmes broadcast in English.
- o Radio Two, the two main African languages, Shona and Ndebele, predominate. It therefore caters to the majority of Zimbabwe's adult population.
- o Radio Three is mainly pop music and is naturally attractive to our youths.
- o Radio Four, the youngest in the chronology of these stations is the educational broadcast. It was launched in 1982.

All these channels are under the Zimbabwe Broadcasting Corporation, (ZBC).

Radio Four undertakes the responsibility to broadcast materials which fall into two broad categories, namely: formal education and non-formal education.

Formal education involves programmes for schools and colleges. Currently only the primary school sector is provided with Radio programmes. These schools fall under the Ministry of Education and Culture, and its department of Audiovisual Services (AVS) is responsible for scripting and recording of the programmes. After the programmes have been recorded and have satisfied those concerned, the audio tapes are delivered to ZBC for broadcast.

In order to ensure efficiency and effectiveness of the broadcast, AVS also prepares printed material which includes time-tables and booklets to inform and guide the teacher in making worthwhile use of the broadcast.

Of perhaps more importance is the use of radio cassettes. While the broadcast is going on, and most of the pupils are listening, the cassette section of the equipment will be recording. The advantages of this is that the lesson can be played over and over again until it is thoroughly understood by every pupil. This facility also helps those pupils and teachers who may have missed the live programmes due to circumstances beyond their control.

The non-formal sector aims at educating people in the diverse areas of our community. For example, those in agriculture learn more animal husbandry and crop production from experts in these fields. Other areas covered include health, trade and commerce, labour relations, social services, energy and industry.

Due to transmission problems not all the areas of the country are adequately covered but the government is continuously working to ensure that every listener gets a clear reception.

Another major problem is the cost of radios in the country, which is above what many would-be students of Radio 4 can afford. Added to the problem is the cost of batteries, which are needed by those in places which have no electricity -- and these are the majority. Despite these problems, however, Zimbabwe has made, and is making, tremendous achievements in its efforts to improve both the provision and quality of education to its people.

FORMAL EDUCATIONAL BROADCASTING IN ZIMBABWE

A.C. Kashambwa

Education Officer (Broadcasting),
Zimbabwe Ministry of Education and Culture

The aim of this paper is to focus on formal educational radio broadcasting in Zimbabwe. Other technological devices used in distance education will not be discussed since this conference is specifically on radio education.

Perhaps, as a starting point, one needs to mention a few salient facts and consider those forces that make Zimbabwe such a unique country.

Zimbabwe, which derives its name from the Great Zimbabwe monument near Masvingo, has a population of about 8 million, and covers 390,580 square kilometers. Sandwiched between the Zambezi and the Limpopo rivers, the country has a high plateau rising to above 1,200 meters.

Over 70% of the total population is agrarian. The agricultural system is basically divided into three: these are the large commercial capital intensive farming areas; the purchase areas (largely occupied by blacks who in the past had proved to be successful master farmers) and the so called T.T.L.s (Tribal Trust Lands) where the majority of Zimbabweans own land on a communal basis with no title deeds. Farming is on a subsistence, labor intensive, level.

Of course, this picture of Zimbabwe is not static. The country continues to experience dynamic socio-political change since the advent of independence on 18 April 1980.

Zimbabwe's economy is basically sustained by its agriculture and mining industries, which earn the country much needed foreign exchange. Unfortunately, colonialism left a legacy of untrained and unskilled black workers. Another unfortunate legacy of colonialism was that Zimbabwe's trading links were inextricably tied to those of South Africa. The country responded to this challenge by forming SADCC -the Southern Africa Development Co-ordination Conference, through which the country would seek to disengage itself from the tentacles of a trading structure dependent on South Africa.

Zimbabwe's Tribal Trust lands have the greatest need for development and general social and economic upliftment. With this in mind, our illustrious leader, Cde R.G. Mugabe, introduced many reforms to mold and develop Zimbabwean life. One such area where change has occurred is in the sphere of education. A new

epoch in education began when free primary education was introduced in 1980. New challenges in our education system demanded new approaches and realistic solutions, and this is where educational radio becomes relevant. Educational radio can provide an answer to some of our educational needs.

FORMAL EDUCATIONAL BROADCASTING IN ZIMBABWE

Ladies and gentlemen, having given you that background, I will now look at formal educational broadcasting in Zimbabwe.

The Ministry of Primary and Secondary Education is in charge of formal educational broadcasting in Zimbabwe and the institution charged with the responsibility of producing formal educational radio programmes is the Audio Visual Services. This falls under the umbrella of the Ministry's Educational Development Unit.

The Audio Visual Services began as a section of the Southern Rhodesia Department of Education in 1948. One of its important functions was to provide a schools' broadcast service. Today, the overall responsibility of the AVS is to provide audio visual equipment and material to assist the teacher to communicate in an effective and meaningful way.

In May 1977 the Audio Visual Service Centre in Harare moved from its old premises to the present site in Upper East Road, Mount Pleasant. Here, there was more room and potential for development. The AVS centre in Harare deals with all schools in Zimbabwe and the Bulawayo Branch supplements the service to schools, particularly in the Bulawayo Region, Midlands and Masvingo.

The establishment of the ZBC Educational channel, Radio 4, in October 1982 was an important landmark in the development of educational broadcasting in Zimbabwe. It created a new dimension for formal and non-formal educational broadcasting.

Zimbabwe has four radio stations. All formal educational broadcasts are transmitted on Radio 4, which operates from Monday to Friday. Although ZBC TV screens a lot of good educational programmes on both TV 1 and TV 2, no formal educational television broadcasts are established for classroom use.

Another important development in the field of educational broadcasting was the purchase and installation of new studio recording equipment between 1984 and 1985. Previously, the AVS centre in Harare had only one studio with old equipment. The centre now has two recording studios where all recordings and packaging of programmes is done before the material is sent to ZBC for transmission. The capacity to produce educational material was greatly increased by the availability of more studio time.

PRESENT APPROACH

With a small team of 4 officers and 2 studio controllers, the AVS broadcasting section is responsible for planning, scripting, production, testing, and evaluation of all formal educational programmes transmitted on Radio 4. The present contribution amounts to a total of 13 hours and 25 minutes of air time each week during the school term.

The budget allocation earmarked for broadcasting in the 1989/90 financial year stands at Z\$42,000. The AVS as a whole had an allocation of Z\$84,000 for the current financial year.

The aim of Zimbabwe's educational broadcasts is to provide enrichment material to improve the quality of education and make learning more interesting. With the coming of independence in 1980, Zimbabwe experienced a massive educational expansion. The key to building a prosperous and successful country is to be realized through the education of the nation. And yet the production of trained teachers, so far, has been unable to cope with the increase in the school population. One of the aims of educational broadcasting, is, therefore to play a supportive role in this changed educational scenario.

POST INDEPENDENCE EDUCATION EXPANSION

	1979	1985
Number of Primary school pupils	819,586	2,229,366
Number of Secondary school pupils	66,215	497,766

STAFF EXPANSION

Number of qualified primary school teachers	15,167	29,482
Number of unqualified primary school teachers	1,658	26,876
Number of qualified secondary school teachers	3,258	8,799
Number of unqualified secondary school teachers	276	4,279

1. PRIMARY SCHOOLS

Primary schools' broadcasts aimed at grade one to grade seven provide the main core of formal educational programmes. The subjects taught are Ndebele, Shona and English for all grades. These are the three main languages in the country, with English being the medium of instruction. For grade one and two classes, Music and Movement is offered so as to train listening skills. With effect from January 1990, new programmes were introduced in line with new developments in the curriculum. These are Social Studies for grade four, and Environmental Science for grade six and seven. All the Shona and Ndebele programmes for grades three to seven are new this year. Generally, programmes are renewed after three years. However, if programmes prove to be unsuitable, they may be replaced before completing a period of three years.

Broadcasts for grades one to seven commence each day at 11:00 a.m. and finish at 12:30 p.m. on Mondays. From Tuesday to Friday each week during the school term, broadcasts commence at 11:10 a.m. and finish at 12:15 p.m. By the end of each week, twenty six different lessons will have been broadcast for the primary schools' broadcasts (repeated in the afternoon from 2:30 p.m.).

Most programmes are scripted on a free-lance basis by experienced and practicing school teachers. The scripts are corrected and edited for production by the AVS broadcasting team.

The AVS broadcasting section produces radio lesson booklets and charts as a back up service of the radio lessons. The radio lesson booklets and programme schedules are printed and sent to schools at the beginning of each term. Booklets provide details of each radio lesson and suggest activities before and after the lesson has been broadcast.

The AVS, as part of its service, provides radio receivers to schools on a first-come first-served basis. Because of limited financial resources at AVS some schools have raised funds and purchased radios for their own use instead of waiting for a supply from AVS.

Through AVS, schools can apply to be exempted from paying Z\$10,50 for a radio license, as required by law, if they prove that the radio in their possession is used for schools broadcasts.

In its effort to maintain contact and obtain feedback, the AVS team visits schools to monitor programmes and also record items for broadcast. Teachers are asked to provide feedback by writing relevant information on the feedback forms sent to schools each term.

2. SECONDARY SCHOOLS

At the present time there is no direct broadcast service to secondary schools. This is partly due to a shortage of resources and lack of air time. The Ministry of Primary and Secondary Education has to negotiate with the ZBC for air time. Also, transmission fees are payable to the Corporation for air time. In order to make up for the absence of secondary school broadcasts, two 30 minute programmes are broadcast on Tuesdays and Thursdays every week during the school term. The programmes have a strong academic orientation. Although the listenership extends from form one to form six level, the tendency has been to concentrate on material relevant at form four or "0" level. In addition to the above, the AVS tape library has an abundance of taped material of which copies can be made and borrowed by schools. The subjects covered range from English Literature to Science.

3. PRE-SCHOOL PROGRAMMES

The AVS broadcasting section also produces programmes for children of pre-school age. The programmes in Shona, English and Ndebele are broadcast during the school term between 10:35 a.m. and 10:55 a.m. The present series have been designed to teach listening skills through stories, mime and music.

4. TEACHERS' MAGAZINE PROGRAMME

Two 45-minute programmes are broadcast for teachers each week during the school term. The aim of the programme is to inform and educate the teachers. Items broadcast range from changes in the curriculum, teaching methods and news items from the Ministry of Education. The Teachers' Magazine programme helps to promote and publicize national education campaigns such as National Tree Day and conservation in general, immunization campaigns, and National Food Day.

5. LEARNING DOES NOT END

The AVS broadcasting section together with the Literature Bureau of the Ministry of Education produces "Learning Does Not End." This programme, broadcast once every week and lasting for 30 minutes, aims at promoting and encouraging local writers. It is mainly in the form of book reviews and dramatizations of works by local writers.

CONCLUSION

The Ministry of Education and Culture has established a sound educational radio system, particularly at the primary school level. However, this needs to be expanded so as to cater to the secondary school sector. Furthermore, it is hoped that such programmes as Teachers' Magazine will be developed and adapted for the training of teachers. Radio should play an increasingly important role in supporting literacy, adult and non-formal education. At the present time, these areas are covered by non-governmental organizations as well as ministries, which exclude the Ministry of Education and Culture. This is not a satisfactory arrangement. Our system is by no means perfect, and has problems such as:

1. Poor reception in some parts of the country
2. Lack of resources - human and financial
3. Unavailability of cheap radios
4. Lack of electricity in some rural areas
5. Lack of transmission facilities by AVS. We have to depend on ZBC, and buy air time from the Ministry of Posts and Telecommunications.

Ladies and gentlemen, I do not wish to expand on these problems as I believe they can be overcome in one way or another, given a strong will and determination on our part. Thank you.

WORKSHOP ON PLANNING AND MANAGEMENT

Dr. Carleton Corrales
AVANCE, Honduras

I. KEY FACTORS FOR AN EFFECTIVE PROGRAM

The key factor in planning and managing an effective educational radio program is a country's political will to solve its educational problems. This responsibility relies not only on the nation's leadership, but on many other forces as well such as labor unions, business associations and, especially, the support of teachers and parents.

This political will is often influenced by widespread political and social movement by political parties and other concerned groups, which at times can provide much needed leadership. A common feature of many developing countries, social and political agitation reflects the mood of countries anxious to make socio-economic changes, but which often lack models and methodologies necessary to make such changes possible.

There is a strong tendency by less developed countries to imitate the solutions or ways of the more advanced countries. This leads to a terrible waste of resources and almost no effectiveness in these programs.

Another key factor is the lack of awareness of the limits of the public education budget. Although this is a common problem, as are teacher strikes, lack of instructional material and school facilities, most policy decisions lead to the expansion of the same model of education. There is lack of experimentation and research into other possibilities of spreading education to all the people and about improving the quality of such education.

Finally, educators and administrators need to pay a lot of attention to the design and production of educational products. While this is an important first step in an educational innovation, the real problem is marketing educational innovations to teachers, students and parents. This includes everything related to distribution and maintenance of the innovation, with special attention to evaluation.

II. THE HIGH COST OF INEFFECTIVENESS

Third World countries face tremendous inefficiency and waste in the management of their educational systems, a situation caused by conflicting demands on such systems. Most countries are trying to assure education for all the people but, at the same time, they must substantially increase the quality of

education. Training is vital for the future of the country so that a skilled labor force, or the manpower necessary for development, can be created.

The most pressing problems are high drop-out rates and grade repetition. Frequently, there are serious doubts about the quality of education of those who finish primary or secondary education. This reasoning leads us to the conclusion that enrollment is a problem, but even more pressing is the efficiency of the system in delivering good education.

The costs of inefficiency are usually hidden. It requires good analytical studies, sound educational research and management skills to uncover all the costs of inefficiency. On the positive side, the existing resources could be used to increase enrollment once we improve the efficiency of the system.

The key question is what technology or model offers the greatest return in good education for the investment made by the nation. There are important concepts in this statement, the first major one being that education is considered an essential investment for social and economic development. Once this link is soundly established in our minds, the next step is the economic and educational analysis of the methodologies used in education. Secondly, we need to grasp the concept of zero-base budgets, a common idea in economics. Could we talk of zero-base models in education or educational technologies and, therefore, force a discussion on effective schooling?

III. MAJOR COST CATEGORIES

In this section I will make more references to the experience of Honduras in developing a mental mathematical radio-based series for first, second and third grades of primary school. I should mention this project was a full-scale development of the mathematics series and therefore the costs are relatively high.

The major cost categories were:

a. Salaries.....	\$170,000.00
b. Paper, tapes, other.....	\$ 13,000.00
c. Operating cost.....	\$ 85,000.00
d. Publicity.....	\$ 30,000.00
e. Equipment.....	\$138,000.00
Sub total.....	\$436,100.00
f. Technical assistance.....	\$700,000.00
Total annually.	\$1,136,100.00

Salaries include administration and supportive personnel. Basically, you need at least four teams.

First, the scriptwriter must produce the master plan for all the sessions and must also write the lessons. Normally this team must be supported by basic research about learning, interactive radio and children's vocabulary.

The second team is made up of studio production personnel. The producer, sound technician and actors are the essential professionals. This means your studio must well be well equipped and dedicated exclusively to lesson production.

The third group is the evaluation team. The size of this team depends on the evaluation model you have adopted. The core number seems to be four members. They should have transportation available almost on an exclusive basis.

The fourth team is the marketing people. These professionals are key to the success of the project. They must participate in the design and development of the product and in the training of teachers. Their full responsibility is developing and carrying out a publicity campaign and planning for implementation. They also have responsibility for market research. Again, the core number seems to be four.

Equipment is a big investment at the beginning of the project and you must have it all in place before starting any other activity.

The equipment for the studio is the biggest item, but you must also make considerations for computers, furniture and transportation. Perhaps the greatest aid in interactive radio has been the use of computers in scriptwriting, marketing and administration. We do not think it is good practice to go into a full printing service. Usually, a small unit of printing is good enough, and for bigger or better quality jobs you must hire commercial printing companies.

Publicity. You have to reserve some money for publicity. Interactive radio instruction, for the great majority of teachers and parents is something new. Therefore, it is natural that there are misgivings in the beginning. The launching of the product must be almost the last stage of a process that begins with market research, testing the product, and the campaign design. Usually, it is better to hire a publicity company for handling the campaign.

Technical Assistance. Assistance is essential for a first quality product because in most cases the country does not have all the necessary expertise. The host country profession staff learn the techniques involved in interactive radio very fast. The

leadership of the project should be by the nationals, but special care should be taken to get the best local professionals and to train them to start running the different sections as soon as possible. As the project grows, technical assistance should be diminished.

IV. SOME POSSIBLE ALTERNATIVES

From a historical perspective we could think of interactive radio as a development process with five stages. These stages are not clearly defined and most of the time they overlap, but at least they give us some guidelines.

a) Basic research and development of the radio lessons

This stage took place in Nicaragua with the production of the mathematic lessons for primary school. There is no doubt that the team benefitted from considerable research and experiments about learning, radio education and curriculum design.

b) Production of full-scale radio lessons

This stage involves considerable research but, basically, is a replication model. The outstanding experiences were the Radio Language Arts Project in Kenya, Mental Arithmetic in Honduras, the Radio Science Project in Papua New Guinea and teaching of Spanish in the Dominican Republic.

c) Adaptation of an already developed series

This involves considerable effort. The savings is in not having to elaborate the master plan and, therefore, the reduction of considerable technical assistance. These experiences have been quite successful. The best examples are Lesotho, Thailand, Dominican Republic, Bolivia and Ecuador.

d) Fast adaptation of a series

This stage is possible when two countries share a great deal of a common culture, specially language. The best example is Costa Rica's adaptation of the Honduran mathematics series.

e) Development of generic series

So far, the experience of several countries has been in the development of radio lessons for local consumption. Lately, there is a strong trend to make more generic

products. The technology allows for separate recording that will make it easy to adapt lessons to local music and separation of segments. In other words, if we keep the basic master plan recorded and only change the periphery of the program the savings will be considerable.

V. COST-SAVING POSSIBILITIES

The possibilities of producing and implementing interactive radio lessons have increased significantly. I am going to mention some that are already proven.

a) Development of generic products

The greatest cost in interactive radio is in research and development. If this aspect can be financed by international agencies, the cost for countries of adapting the series to local needs is reduced to a great extent. This will demand stronger international cooperation and more local flexibility, but with shrinking financial resources and growing concern about quality of education, the appeal of interactive radio will be strong.

b) Participation of the private sector in education

The private sector is sponsoring broadcasting time, notebooks and posters in the Honduran project. This makes it possible to offer the educational package to teachers at a lower price. Private non-profit associations have proven efficient in managing the program. This allows the Ministry of Education to have control of the product without the headache of hiring people. Usually, private associations have more administrative flexibility and are less affected by political changes in government.

c) Selling of the educational packages to the school

Several approaches have been used in the distribution system. One is selling the package to schools. Very often, the school administration runs a small cafeteria and the profits can be used to buy radios.

Another possibility is that some business in the community buys the package and then donates it to the school. In many schools, parent-teacher associations have assumed this expense.

Finally, teachers might be interested in buying the radios, which they take good care of. However, when a teacher leaves the school, he or she takes the radio, thus creating a problem for the new teacher who might be interested in the radio lessons but have no access to a radio set.

WORKSHOP ON COSTS FOR RADIO-BASED EDUCATION PROGRAMS

Dr. Thomas D. Tilson
Radio Learning Project

OBJECTIVES:

Participants will learn about and review concepts in the following areas:

1. Key factors for an effective program;
2. Cost vs. Cost-effectiveness;
3. Major cost categories;
4. Sample costs for specific programs; and
5. Cost saving possibilities.

SPECIFIC ACTIVITIES:

1. Key Factors for an Effective Program

Before looking at costs, it is important to ask the question "Is this program effective?" The workshop will begin with a brief overview of factors that relate to program effectiveness.

2. Cost vs. Cost Effectiveness

How much a program costs should not be the overriding factor. There are times when developing an inexpensive program is a waste of money; other times, spending money on a new program may actually save money. This part of the workshop will examine the relationship between cost and effectiveness. How should we conceptualize this relationship? How might we apply a model of this relationship to instructional radio programs?

Finally, during this part of the workshop, we will look at the theoretical relationship between program effectiveness and the internal efficiency of a school system. When might spending money on a new program reduce the cost of education per student per year and/or reduce the cost per graduate?

3. Major Cost Categories

During this part of the workshop we will review the major cost categories for each stage of a project -- developing (or adapting) the materials, implementing the program on a large scale, and maintaining the program on a long-term basis. We will look at some alternative funding sources for each stage of the project.

We will also look at computer programs for projecting costs.

4. Sample Costs for Specific Programs

We will provide some general cost guidelines for developing or adapting instructional programs, and for long-term recurrent activities.

5. Cost Saving Possibilities

Finally, we will examine ways to reduce the costs of instructional radio programs while not sacrificing quality.

7 Jan 90

THE ECONOMICS OF RADIO EDUCATION

Thomas D. Tilson

Radio Learning Project
Education Development Center
55 Chapel Street
Newton, MA 02160

THE ECONOMICS OF RADIO EDUCATION¹

Thomas D. Tilson²

As demands for greater access to high quality schooling increase while resources stagnate, countries must find new ways to serve more students with improved education at a reasonable cost. Distance education remains a promising, but underutilized means of meeting these needs. This paper focuses on instructional radio as a widely available, low-cost medium, that can play an effective role in a distance education program.

This paper presents an economic perspective on radio education. It focuses on the need to make decisions from among alternative instructional interventions that often hold quite different claims for both effectiveness and cost. Such alternatives may include new textbooks, teacher training and various applications of educational technology.

The paper includes an overview of cost-effectiveness analysis, alternative ways of allocating sources of funds, and suggestions on how to minimize costs for radio projects. The paper also describes differences in cost structure between traditional and distance education programs, and the potential impact of instructional radio on the internal efficiency of schools.

The potential of radio programs to improve the quality of education in the developing world has barely been tapped. Unlike many other policy options to raise instructional quality while maintaining low costs, radio programs can deliver consistently high quality lessons to students throughout a nation, even in the most remote areas. Radio can help to address the key issues of access, equity, quality, and efficiency.

At the primary school level, radio programs can improve the quality of instruction, especially in classes with underqualified teachers. In addition, programs at this level have the potential to improve the efficiency of the school system. Radio programs

¹ This paper was prepared for the African Conference on Radio Education co-sponsored by the Radio Learning Project and the Zimbabwe Ministry of Education and Culture, held in Harare, on January 22-26, 1990.

The Radio Learning Project is funded by the Agency for International Development, Bureau for Science and Technology, Office of Education to share information about interactive radio and to provide support where there is interest. The Radio Learning Project consortium consists of the Education Development Center as prime contractor and Friend Dialogues of North Carolina and the Academy for Educational Development.

² Dr. Tilson works for the Education Development Center, 55 Chapel Street, Newton, Massachusetts 02160, where he is Director of the Radio Learning Project.

can also reduce inequities. For example, radio programs have reduced the rural-urban gap in learning achievement in mathematics, language and science. Radio can also be used creatively to foster gender equity, both through its programming and, where appropriate in some countries, by supporting underqualified women teachers who are asked to teach in small community schools for girls. Finally, radio can improve access by teaching primary school subjects in a non-formal setting for children who live in communities without primary schools.

At the secondary and tertiary levels, radio programs can be particularly valuable as part of a distance education program. Many countries cannot afford to meet the growing demand for secondary and tertiary education; distance education may provide the only affordable option. Open universities have become a particularly attractive way for providing higher education to a larger number of people. Also, because of the high cost of traditional in-service teacher training, many countries are turning to distance education programs, often programs that includes radio instruction, as an affordable and effective way to upgrade the skills and qualifications of teachers.

But neither distance education programs in general, nor instructional radio in particular, may necessarily be either effective or inexpensive. Because instructional materials for most distance education programs must stand by themselves, that is, without the support of classroom teachers who can clarify or explain difficult concepts, good instructional materials are difficult to produce. Thus, it is particularly important to evaluate their effectiveness. Likewise, cost considerations also deserve special attention. It is important to know what the total cost will be for a distance education program based on the projected number of students, and who is to pay for those costs. Can the Ministry of Education afford its share? Will the students be able to pay what is expected of them? If the radio programs are to be used in primary schools, can the teachers or communities afford the radios and batteries? This paper will present several perspectives on both costs and effectiveness, and is intended to help guide educational leaders who must make decisions on the use of distance education programs, especially those that incorporate instructional radic.

1. The Relationship between Cost and Effectiveness

To be most useful to decision makers, program assessments must include information on both costs and effectiveness. For example, take the case in one Central American country in which computer instruction was pilot tested in the secondary school curriculum. An evaluation indicated that learning gains were impressive. Based on this evidence, it would appear that the computers merited countrywide expansion. Yet a cost analysis showed that recurrent costs would be about 25% of the total budget for secondary schools. In short, what appeared to be very

effective was unlikely to be cost effective. It certainly was not affordable.

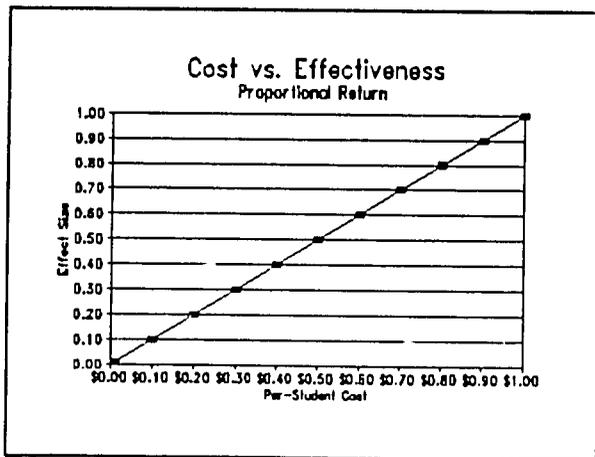


Figure 1 Proportional Return for Investment

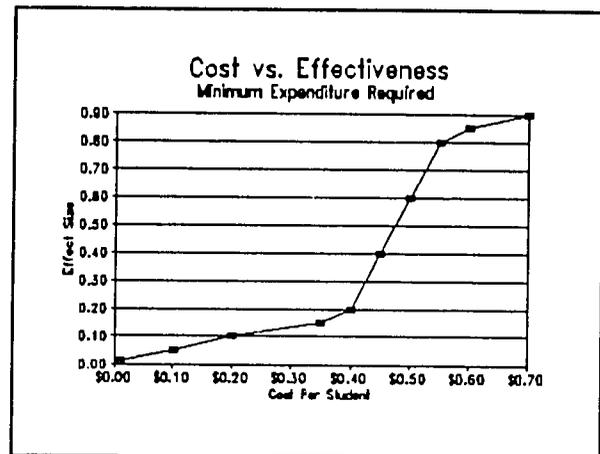


Figure 2 Minimum Expenditure Required

A cost-effectiveness analysis also can help to answer more refined questions about whether to introduce a particular instructional program. For example, it can be used to estimate the optimal investment for a particular intervention. Thus, in one intervention, learning gains may increase proportionately to the amount of money invested in the program. This is shown in Figure 1. In another situation, as shown in Figure 2, there may be marked improvement only after reaching a certain level of expenditure (e.g. \$0.40). It may be necessary to invest up to a certain level to ensure a quality product, for example, to employ talented curriculum designers and evaluators, and to purchase radios of adequate quality for use in large classrooms. Figure 3 shows yet a different relationship; that an increase in expenditure beyond a certain amount (e.g. \$0.50) results in little additional benefit. For example, the hiring of tutors beyond a certain level for face-to-face meetings or the addition of color to textbooks may not result in commensurate returns on learning. Through such an analysis of potential returns from varying levels of investment, one can estimate the appropriate level of investment for a particular program.

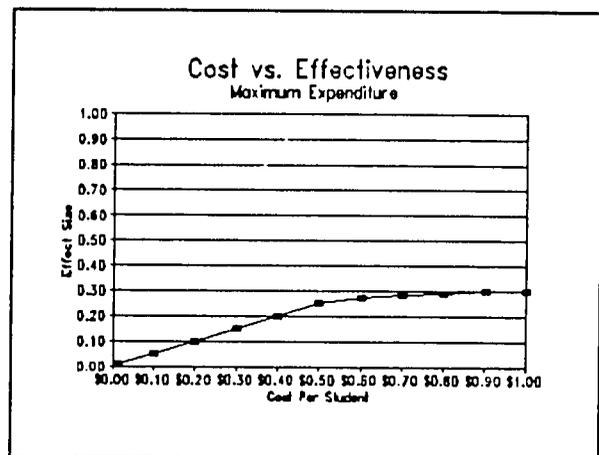


Figure 3 Reduced Returns for Added Investment

A different example may help to clarify the relationship between effectiveness and cost. Ideally, one would like to know how much achievement is attained per unit of cost. For example, if the addition of a radio mathematics program for grade 2 children adds US\$0.50 per child annually, then one needs to know if the increased learning gain is worth the additional fifty cents. (The potential cost savings through an improvement in school efficiency is discussed later in this paper.) The usual test scores will not provide the answer, although they can provide a good measure of how much the children with the radio programs have learned as compared with children in traditional classes. It is very useful to know, for example, that children with the radio lessons scored 70 points on the test and the children in traditional classes scored only 50 points. Such scores would likely indicate a powerful impact of the radio programs.

To relate these scores to costs, however, one would need to standardize the test so that each unit of achievement gain represents the average time period to learn the material.³ For example, assume that the test mentioned above were, in fact, standardized in a way such that a 10 point gain of achievement represented one month of study. Thus, the 20 point difference between the two groups of children would represent about two months of study. Since it is relatively easy to determine how much it costs to teach children mathematics for a year in a traditional school, then one can determine if the radio math programs offer a good investment.

As an example, assume that the total budget for the Ministry of Education is \$20 per child, and that the math lessons takes up 20% of the instructional time, or about \$4 per child per year. If there is a ten-month school year, then each month of math study costs \$0.40. If the Ministry spends an extra \$0.40 on math instruction in the traditional way (which it will do for the children when they go to grade 3), they will get one more month of learning gains. But if they spend \$0.50 for a radio-mathematics program, then they will get two months of learning gains. And these added two months of learning will all take place in grade 2. In this situation, an investment in the radio math lessons would be a good investment from a cost-effectiveness perspective.⁴

³ This can be done by administering a single test to children at different times during their course of study. In this example, one would want several test scores during grades 2 and 3.

⁴ Although this level of impact of radio programs may seem high, there is evidence from the Radio Learning Project activities in Bolivia and elsewhere that such gains may be possible. Based on results from a summative evaluation of the grade 2 radio mathematics lessons in Bolivia, the control

In reality, decisions about educational interventions are not made on the basis of a cost-effectiveness analysis alone. First, there may not be good data available on either costs or effectiveness. In addition, other factors including political matters impact on the decision making process as well. The principal point of this paper is not that cost-effectiveness should be the only criterion upon which to make a decision about an intervention, but that it should be an important criterion and that greater efforts should be made to collect and analyze relevant data. This means, in part, that ministries of education should have a good management information system in place.

Also, a distance education approach is not always the best option, but it can be a cost-effective way to improve school quality in many circumstances. Most often the best approach is a mix of interventions such as textbooks, teacher training, and a distance education component that includes radio. For example, it may be very cost-effective to provide high quality radio programs to schools and, if necessary, to finance these programs by measures such as limiting the expansion of textbooks (perhaps distributing them to every two children rather than to each child) or by reducing the scope of planned in-service teacher training.

2. Determining Effectiveness

It is extremely important to try to assess the effectiveness of programs. Often limitations of financial resources result in inadequate program evaluation; yet in the long run, it could be even more costly to develop and disseminate new programs that have not been thoroughly evaluated.

It is not necessary for each country to carry out a new evaluation on each type of intervention under consideration. Much work has already been done. For example, the World Bank has conducted research on the impact of introducing textbooks on learning; the results demonstrate that textbooks consistently result in marked learning gains.

Also, over the past fifteen years there have been extensive studies on interactive radio in primary schools. The results have consistently shown the power of this technology to raise achievement levels in math, language, science and health. Interactive radio is a term used to describe a system of radio instruction with the following characteristics -- intensive instruction by radio, usually half-hour broadcasts each day to children in school or in radio listening groups; broadcasts

group (traditional classes) scored 47% and the experimental group (radio group) scored 63%. The effect size was 0.91.

designed to teach core curriculum material; and a style of lessons in which children appear to "interact" with the radio teachers because they are asked every few seconds to participate in the learning activities.

Once a country has decided on its own educational objectives and the mix of interventions it wants to introduce or strengthen, then it may wish to carry out its own evaluations. A formative evaluation⁵ is particularly important when new programs are being developed because the information attained from such an evaluation can be used both to revise lessons already developed and to modify plans for future materials as well. Once the materials have been developed and revised, a summative evaluation should be carried out to determine the effectiveness of the program. The results of this summative evaluation will enable educational leaders to make a more informed decision about implementation of the new materials or program.

At times it may be difficult or impossible to separate the impact of different components of a program. For example, if the program includes text materials, radio lessons, and face-to-face meetings, one may need to rely on studies that have examined each type of intervention separately.

3. Cost Factors

a. Fixed vs. Variable Costs

The total costs for an education program are the sum of fixed and variable costs. Fixed costs are those costs that do not vary with the number of students; that is, it makes no difference if there are ten students or a million. Variable costs are those expenses that increase with the addition of each new student. The fixed cost would typically be a large figure; to determine the fixed cost per student, one would divide that figure by the number of students. The variable cost is a small figure; it is the extra cost to add one more student to the system. The total variable cost of a system is calculated by multiplying the variable cost by the number of students. Distance education programs, many of which have a radio component, and traditional schools have different cost structures as they relate to fixed and variable costs.

⁵ A formative evaluation assesses a program as it is being developed or "formed." The purpose of this type of evaluation is to help improve the materials. In contrast, a summative evaluation measures the impact of the finished product. It is carried out under experimental conditions. The purpose is to provide information on the overall effectiveness of the materials to help educational leaders decide on implementation.

Traditional schools tend to have relatively low fixed costs but high variable costs. The most significant variable cost in such systems is teacher's salaries. That is, as the number of students increase, there is usually a proportional increase in the number of teachers. Other variable costs would include textbooks and classroom buildings.

Distance education programs tend to have higher fixed costs because of the facilities and staff required to develop and support the courses. This infrastructure needs to be in place regardless of the number of students. Yet the variable costs are usually lower than those of traditional schools. This is particularly true where radio programs are an important part of the course and where there are not expensive print materials nor many face-to-face meetings. These relationships based on university level experience are shown in Figures 4 and 5⁶.

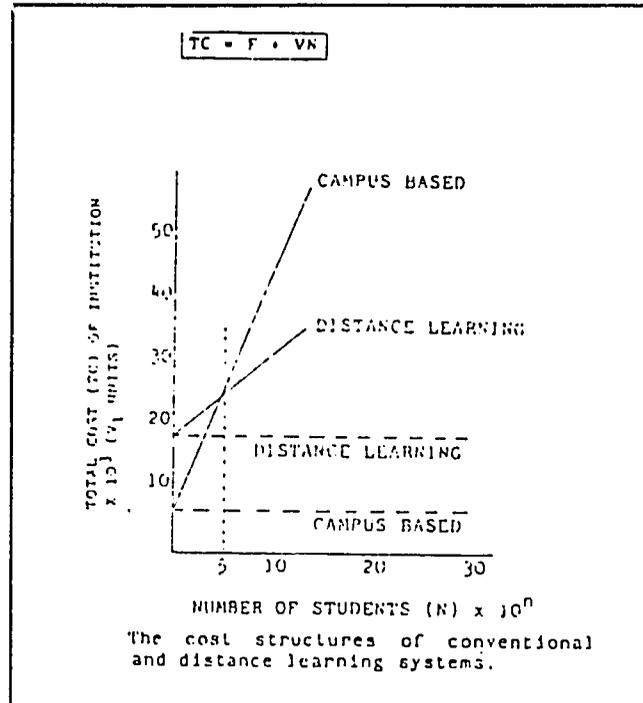


Figure 4 Total Cost for Traditional and Distance-Learning Programs

In Figure 4 the total cost is represented by $TC = F + VN$ where TC, the total cost, is equal to the sum of the fixed cost F, plus the variable cost per student V times the number of students N. Note that the fixed cost for the distance learning program is higher than that for a traditional or campus-based program. Therefore, if there are not many students, a campus-based option would be more appropriate from a cost perspective. But the variable cost for campus-based programs is high, resulting in a higher total cost with an enrollment of over 5,000 students, given the assumptions in Figures 4 and 5.

Figure 5 shows this relationship on a cost per student basis. This average cost is shown by the formula $AC = F/N + V$; where the average cost AC is equal to the fixed cost F divided by the number of students N, plus the variable cost per student V.

⁶ Grenville Rumble. "Economics and Cost Structures," in D. Stuart, D. Keegan and B. Holmberg. Distance Education: International Perspectives, London: Croom Helm, 1983, p. 427-428.

Note how the average cost of the distance learning program starts higher (about 9 units) than the campus-based program (about 8 units). The cost per student decreases rapidly for both programs as the number of students increase, but since the variable cost is much lower for the distance education program, the cost per student for the distance learning program quickly becomes lower than that for the campus-based program.

In sum, the theoretical advantage of a distance-based program is that it can serve a large number of students at a much lower per-student cost than can a traditional education program. That is, there are major economies of scale for a distance education program that can't be matched

by a traditional educational program. But a decision maker must assess the assumptions carefully. Just how low can both the fixed and variable costs be before program quality is affected? How do these costs compare with the those of the traditional system? How many students are needed before a distance education program can be justified?

b. Special considerations for in-school use of radio

The economies of scale argument used so persuasively to support distance education programs applies in only a limited way to the in-school use of radio programs. Radio programs for children in schools do not reduce the costs associated with traditional schools. There is still the need for teachers and instructional materials. Thus, the radio programs add to both the total cost of schooling and the cost per student as well. Economies of scale are only applicable in minimizing the add-on cost per student through large-scale implementation. That is, given that the radio programs have a low variable cost, the greater the number of students using the programs, the lower the cost per student.

However, radio education is only one of several policy options which require an add-on cost. New textbooks, more teacher training, an increase in the number of supervisors, and additional years of pre-service training all represent an add-on

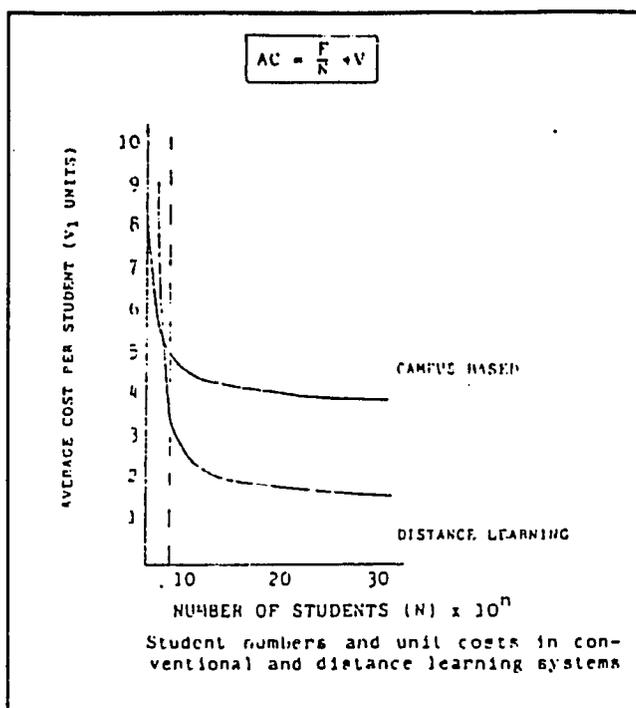


Figure 5 Cost per Student

cost to the system. Thus, the decision maker needs to take into account the relative effectiveness and costs of different options in deciding what combination of interventions to recommend. A closer look at some of the options follows.

An increase in the number of textbooks is a variable cost because the money spent on new texts is directly proportional to the number of students who are provided with the books. The costs for textbooks can be substantial. Likewise traditional in-service teacher training represents a high variable cost because of the typically large number of teachers to be trained and the associated costs for travel, per diem, and salaries for instructors. The high cost for in-service training is the driving force for the increasing interest in distance education teacher training programs.

There is limited research that compares the cost-effectiveness among different interventions. One study by Lockheed and Hanushek⁷ examines several radio, textbook, and teacher training projects in developing countries. The studies measure the effectiveness of each intervention in terms of effect size and cost per student. They then combine the cost per student and effectiveness to obtain a measure of efficiency. Figure 6⁸ shows the relative impact on achievement of the interactive radio programs, textbooks and teacher training.

Figure 7 demonstrates the relative cost of each intervention on a cost per student basis.⁹

Figures 6 and 7 show two things. First, based on the studies reviewed by Lockheed and Hanushek, interactive radio is the most effective intervention,

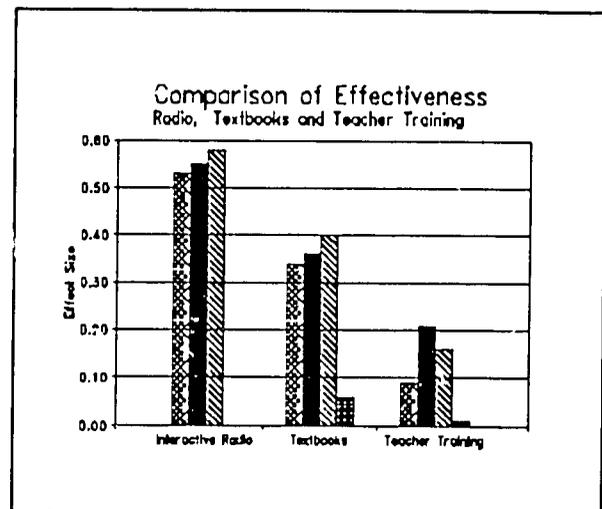


Figure 6 Comparing Effectiveness: Interactive Radio, Textbooks, and Teacher Training

⁷ M. Lockheed and E. Hanushek, "Improving Educational Efficiency in Developing Countries: What Do We Know?" *Compare*, Vol. 18, No. 1 (1988), P. 21.

⁸ See the Appendix for the full data from the Lockheed and Hanushek study.

⁹ The one interactive radio project that shows a relatively high cost is for grade 1 mathematics in which children are provided a worksheet each day to write on and then throw away.

followed by textbooks and then teacher training. Second, the per-student cost of interactive radio and textbooks are comparable, and the teacher training costs are much higher.

Figure 8 shows the actual cost-effectiveness of the three interventions, or what Lockheed and Hanushek call "efficiency;" this is the effectiveness per U.S. dollar. The efficiency measure is calculated by dividing the effect size by the cost per student. Figure 8 shows that, overall, interactive radio is the most cost-effective intervention, followed closely by textbooks. Teacher training, based on these studies, is a poor intervention based on cost-effectiveness analysis alone.

One of the difficulties of studies such as these is that the research assumptions for both effectiveness and costs vary from project to project. Thus, one needs to treat comparative differences with some caution. However, there is one study that directly compares the impact of interactive radio and textbooks on achievement. As part of the Radio Mathematics Project in Nicaragua, Jamison, et. al.¹⁰ carried out an experiment in Grade 1 mathematics classes with three groups -- limited textbooks as found in typical schools (control group), ample textbooks with one per student (textbook

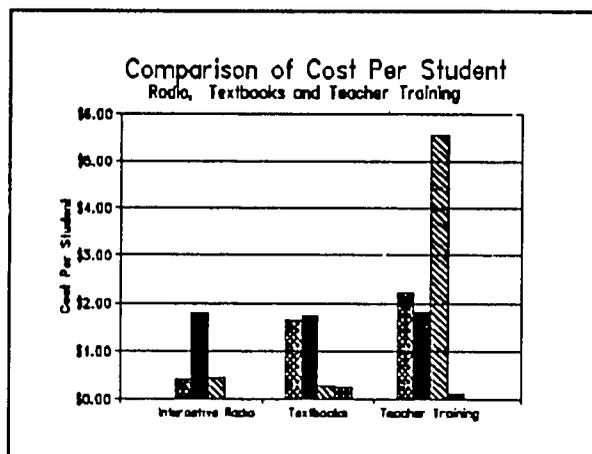


Figure 7 Comparing Cost: Interactive Radio, Textbooks, and Teacher Training

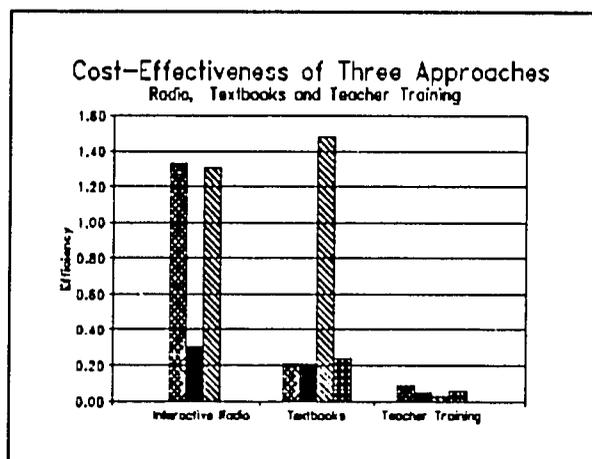


Figure 8 Cost-Effectiveness: Interactive Radio, Textbooks, and Teacher Training

¹⁰ D. Jamison, B. Searle, K. Galda, and S. Heyneman, "Improving Elementary Mathematics in Nicaragua: An Experimental Study of the Impact of Textbooks and Radio on Achievement," World Bank Reprint Series, Number 391, 1981.

group), and interactive radio lessons (radio group¹¹). There were no significant differences among the three groups on the pretest. The mean posttest scores for each group using the class as the unit of analysis is shown in Figure 9. Clearly, there was a marked impact on achievement from both interventions. Availability of textbooks increased student posttest scores by about 3.5 items correct, approximately .33 of a standard deviation; the radio lessons increased the scores by a much greater margin of 14.9 items correct, approximately 1.5 standard deviations.¹² Thus, although the provision of textbooks significantly enhanced learning, interactive radio resulted in a much more impressive increase in learning.

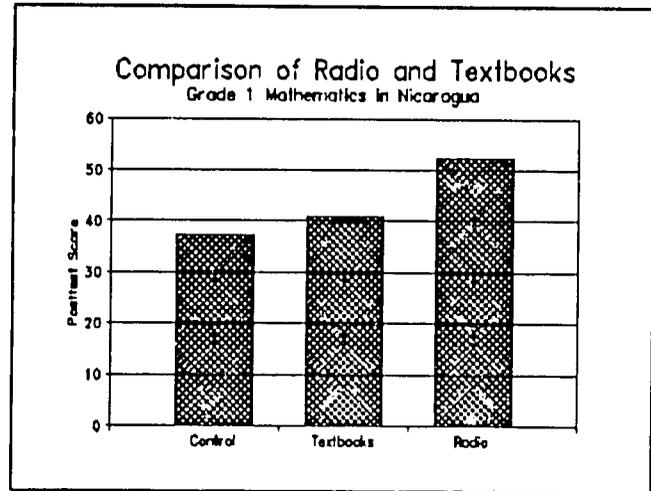


Figure 9 Impact of Textbooks and Interactive Radio on Grade 1 Math Achievement

c. Special Case of Non-formal Primary School

Another model for using radio is to increase access to primary schools by establishing radio listening groups in communities where there are no primary schools. Such a distance education program for primary school children exists in the Dominican Republic. RADECO, or the Community-Based Radio Education Project, uses interactive radio to teach young children math and language, plus a little science and social studies. Children meet for an hour each day at a village site where an adult supervises each lesson. The major goal is to provide an education comparable to what children receive in traditional

¹¹ The interactive radio math lessons (for grades 1-4) developed in Nicaragua consist of daily, twenty-five minute broadcasts followed by another twenty-five minutes of teacher-led activities based on suggestions in a teachers guide provided by the radio project. Textbooks are not used. An alternative interactive radio mental arithmetic program (for grades 1-3) is being developed in Honduras; this program focuses on skills of mental calculation and the application of math to everyday life. This course is designed to complement traditional math textbooks.

¹² The posttest used a matrix-sampling design with 84 items, one fourth of which was taken by each student. The test was constructed by selecting items from pools defined from the topics of the official curriculum. The number of items for a topic was chosen to be proportional to the time allotted to that topic by the curriculum guide.

schools, yet at a much lower cost to the government. Evaluation results show that children in these radio schools do as well in reading, and better in mathematics, when compared with children in traditional schools in comparable communities.

Because RADECO is an alternative to formal schools, the economies of scale are particularly important. A cost study showed that, once implemented on a reasonable scale, the per-student cost would be about half that of the formal school system or about \$15 per student.¹³

The RADECO interactive radio lessons could be used in the formal school system as well; in fact, the RADECO office is currently recommending this action. Winkler¹⁴ estimated that the math lessons could be implemented in the traditional schools for a per-student cost of about \$0.71.

4. Determining Costs

a. Cost Ingredients

Levin¹⁵ describes an "ingredients method" for costing projects. It consists of adding up all the elements or ingredients that are a cost to the project, above and beyond what is already being spent. The inclusion of add-on costs only is known as a marginal cost analysis. Typical cost categories include (a) personnel, (b) facilities, (c) equipment and materials, (d) other program costs, and (e) client inputs (e.g. contributions that are required of the students or parents). The cost values placed on each ingredient should be a fair market price or, where this is not possible, an estimated value sometimes referred to as a shadow price.

Friend Dialogues, a member of the Radio Learning Project consortium, has developed three computer programs for making cost projections. Although these programs were designed for radio programs, they can be used for any technology. These programs are based on the ingredients method and are designed to help the user through the process step by step.

¹³ Jorge A. Sanguinetti, "The Replication of the RADECO Project in the Dominican Republic: Recurrent Cost Implications," Washington, D.C.: Development Technologies, Inc., 1985.

¹⁴ Donald R. Winkler, "Economic Analysis of Radio Education: Evaluation of a Proposal to Use Radio to Teach Mathematics in the Dominican Republic, 1984-1989," USAID/Santo Domingo, 1984.

¹⁵ Henry Levin, Cost-Effectiveness: A Primer, Sage: London, 1983.

Table I Sample Costs for Interactive Radio English in Standards 1-3

	Standard 1	Standard 2	Standard 3
Annual total program costs			

Workbooks	\$10,278	\$11,500	\$12,139
Teacher training	\$501	\$494	\$486
Teacher's guides (annualized)	\$470	\$498	\$513
Radio receivers (annualized and averaged over shared classes)	\$7,900	\$7,787	\$7,674
Maintenance of radio (averaged over shared classes)	\$888	\$875	\$862
Power, battery	\$18,936	\$18,666	\$18,395
Power, utility	\$0	\$0	\$0
Radio transmission	\$12,500	\$12,500	\$12,500
Duplication of worn tapes	\$1,330	\$1,330	\$1,330
Administrative & clerical salaries	\$1,440	\$1,080	\$1,080
Administrative overhead (office, etc.)	\$800	\$600	\$600
Administrative travel	\$200	\$150	\$150
Delivery of materials and supplies	\$598	\$618	\$626
	-----	-----	-----
Total program cost per year (annualized)	\$55,841	\$56,098	\$56,355

The user first decides which of three programs to use -- program development, program implementation, or program maintenance on a long-term basis.¹⁶ Each of these areas has a different set of cost factors and may require different kinds of calculations. For example, the implementation model allows the user to decide the extent of the implementation and the number of years over which it will take place.

The following description is based on the model for projecting the maintenance or recurrent costs. The program first asks for demographic information such as the number of students, teachers, classrooms, grades using the programs, and sessions of school each day. The next set of questions asks about course requirements such as the number of lessons and the kind of accompanying materials. Another section asks for assumptions such as availability of paper and pencils, the estimated life of the radios and their rate of repair. The next sections ask for cost information on such things as salaries, paper, radios, batteries, teacher training sessions, etc. The program then generates both total costs and costs per student.

A sample output showing total costs is shown in Table I. These data are from a preliminary analysis of expenses from

¹⁶ All three programs run on Javelin software; the program for recurrent costs runs on Lotus 123 as well. For more information on these programs, contact the Radio Learning Project.

Table II Costs for Standard 1 English

Lesotho where interactive radio English programs are teaching children in Standards 1-3 throughout the country.¹⁷ These estimates reflect the added recurrent costs for implementing

Personnel - Central office	\$3,038
Radios, repair, power	\$27,724
Supplies - School	\$10,278
Teacher Training (including guides)	\$971
Transmission and related costs	\$13,830
TOTAL	\$55,841

the radio series which consist of daily half-hour broadcasts to children in each grade for a total of one and a half hours of broadcasting per day. Table I shows the total annual recurrent costs. Each of the line items is based on certain assumptions about the number of students, materials available in schools, and the price of each component.

One can easily combine some of the line items and then display them in tabular or graphic form. Table II shows the Standard 1 costs by major category; Figure 10 shows that data graphically.

The computer program also generates the cost per student for each category. In this example, the total cost of \$55,841 is spread over 80,481 Standard 1 students. Thus, the cost per student is \$0.69¹⁸

The range of costs (both development and recurrent) for implementing an interactive radio program can vary greatly depending on the specific circumstances in a country. Under some conditions the cost per student could be as low as a few cents; under

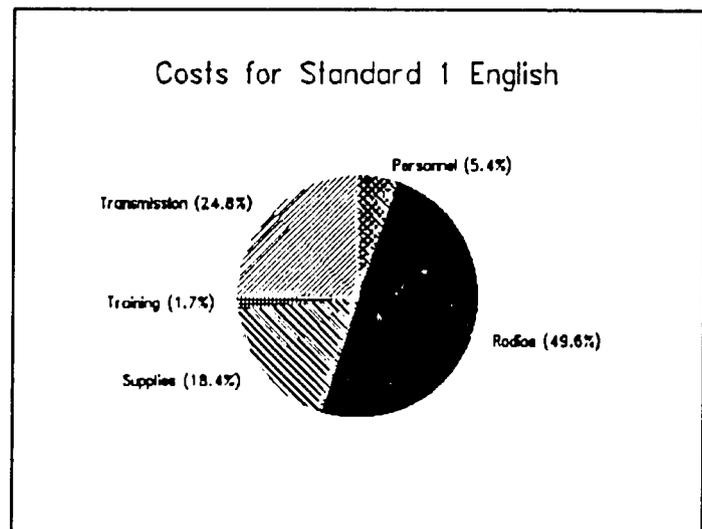


Figure 10 Major Cost Categories for Standard 1 English

¹⁷ The cost study is being prepared by this author with assistance from Maurice Imhoof and Jack Clarke in Lesotho.

¹⁸ About 40% of this cost is for radio batteries. Based on an ongoing study by the Radio Learning Project in Honduras, the cost for batteries could be reduced by about 45% using a solar panel to recharge nickel-cadmium batteries. If the results obtained in Honduras can be replicated in Lesotho, the solar power system could reduce the recurrent cost per student to \$0.48.

other circumstances the cost could be as high as \$3.00 or more. The low cost model would be a result of a large number of students, no required print materials, and a low cost power source for the radios. The high cost model would reflect factors such as expensive support materials (e.g. science kits), few students, or expensive batteries for the radios. It should be emphasized that these estimates for recurrent costs do not include the costs for developing the programs nor has a discount rate been taken into account in the calculations.

b. Cost Allocation

Based on Levin's "ingredients" approach, once the cost for each element has been established, it is necessary to determine who is going to pay for those costs. The allocation of costs is extremely important, for a Ministry of Education may be able to

Table III Allocation of Costs for Radio-English Program Program in Lesotho

STANDARD 1 ENGLISH IN LESOTHO ALLOCATION OF COSTS				
Annual total program cost	Total Cost	Ministry of Education	Ministry of Information & Broadcasting	School &/or Teachers
Workbooks	\$10,278	\$10,278		
Teacher training	\$501	\$501		
Teacher's guides	\$470	\$470		
Radio receivers	\$7,900	\$5,673		\$2,227
Maintenance of radios	\$888	\$716		\$172
Power, battery	\$18,936			\$18,936
Power, utility	\$0			\$0
Radio transmission	\$12,500		\$12,500	
Duplication of worn tapes	\$1,330	\$1,330		
Administrative & clerical	\$1,440	\$1,440		
Administrative overhead	\$800	\$800		
Administrative travel	\$200	\$200		
Delivery of materials	\$598	\$598		
Total Program Cost	\$55,841	\$22,005	\$12,500	\$21,336
Cost Per Student 80,481 students	\$0.69	\$0.27	\$0.16	\$0.27

afford radio programs only if some of the costs are shared with other ministries, students, parents, schools, and international

donors. Table III illustrates how some of the costs are shared in Lesotho. Other cost categories that might apply to other countries include international donors, and students or parents.

In Table III the share of the expenses born by the Ministry of Education is \$.27 per child. The Ministry of Information and Broadcasting would cover the costs for transmitting (\$.16 per child), and the schools and/or teachers would pay part of the costs of purchasing and maintaining the radios, and would provide the batteries (\$.27 per child). This allocation is only one of a great many options; the actual division of expenses would need to be worked out for each country. The main point, however, is that there are options for the allocation of expenses for radio programs that need to be considered. For adult, non-formal distance education programs, it would be customary to charge a users fee to help offset the program costs.

Although the theoretical add-on cost is \$0.69 per student, in fact the actual add-on cost in Lesotho is only \$0.53. The Ministry of Information and Broadcasting transmits the English programs at no additional cost. They simply removed other taped programs they had on the air at that time, programs that were not generating advertising income, and replaced them with the radio-English tapes. Not only has the radio station not lost any income, they have not incurred any other additional expenses either.

5. Primary School Education -- Impact on Internal Efficiency

Another important consideration is the potential impact of radio programs on the efficiency of the education system. Internal efficiency refers to the extent to which children pass successfully through the school system on time. Dropout and repetition rates are major indices of efficiency; another important index is the number of years of schooling that is required for each graduate. For example, in many countries where there is high repetition and dropout, it may take twelve years of schooling for each sixth grade graduate.¹⁹

How might the cost for an interactive radio series be justified on the basis of improved efficiency? Although the radio lessons for children in schools can be implemented only as

¹⁹ Note that a reduction in the number of children who drop out of school will result in an increase in the total number of children in school; a reduction in the repetition rate will result in a decrease in the school population. Thus, in terms of total school enrollment, a proportionate improvement of both indices of efficiency (dropout and repetition) will not have a significant impact on total enrollment. However, the efficiency of the school system will improve because more children will receive more years of schooling, and it will take fewer years of education to produce a school graduate.

an add-on cost, the lessons do result in significant learning gains. Theoretically, if the children learn more math and language, for example, there should be an increase in the promotion rate and a proportionate decrease in repetition. Even a modest increase in promotion could result in a significant savings for the Ministry of Education in terms of the cost per primary school graduate. This savings could pay for the costs of the radio programs. The following example illustrates the relationship between cost and efficiency. In order to make the calculations, the following assumptions were made:

- o There are 50 students per class.
- o The add-on cost for the radio programs is \$0.65 per child per year, or \$32.50 per class.
- o The Ministry of Education spends \$15 per student per year.
- o The radio programs result in 3 additional children being promoted.

The calculations are straightforward. It costs the Ministry of Education \$32.50 per classroom per year for the radio programs, but these programs result in three more students being promoted to the next grade. Therefore, the Ministry does not need to pay for the education of those three students for the year they would have repeated. Thus, for the added expense of \$32.50, the Ministry saves \$45 for a net savings of \$7.50.

\$32.50 Spent for radio lessons	Three children more are promoted	\$45 Saved by not educating 3 students an extra year	\$7.50 Net Savings
---	--	--	--------------------------

Radio programs for the formal school system are generally developed to improve instructional quality. And there are good data to show that some radio programs do, indeed, improve school quality. In addition, many people argue that an increase in the quality of education will also improve the efficiency of schools because children will learn more, they will enjoy school more, and parents will be more supportive of schooling. As a result, more children will stay in school (reduced dropout) and more of them will be promoted (reduced repetition) each year.

Unfortunately, studies that try to relate improved quality of instruction to changes in efficiency are rare, especially if one is looking at the impact of radio lessons. A study carried out in Nicaragua on the impact of the Radio Mathematics lessons on promotion rates found that there was no impact; that is, based on a questionnaire presenting hypothetical situations, the teachers tended to fail the same number of children regardless of their math achievement scores.

Table IV Impact of Radio-Math and Textbooks
Honduras - Grade 1

	Traditional Instruction	Textbooks with Teacher Training	Radio, Textbooks and Teacher Training
Mean score	34.3%	43.7%	51.9%
Effect size		0.43	0.80*

This refers to the difference between traditional classes and those classes that combined radio and textbooks with teacher training.

A recent study by the Radio Learning Project in Honduras is more encouraging. Before turning to the potential impact of interactive radio on promotion rates (and, thus, internal efficiency), a summary of the evaluation results is needed. A summative evaluation of grade 1 arithmetic showed that children who had new textbooks, and whose teachers were provided some training in using the new texts, learned more than children in traditional classes. The impact was much more substantial in classes where interactive radio arithmetic lessons were also added.²⁰ As shown in Table IV, the effect size for adding textbooks (with some teacher training) was 0.43, but when interactive radio was added as well, the effect size increased to 0.80.

The Radio Learning Project completed further analyses of the test data to determine the potential impact on school efficiency of this increased achievement. Specifically, we wanted to examine if the interactive radio lessons might reduce the number of students repeating grade one.

²⁰ Traditional group - children who received traditional instruction. This group was tested at the end of the 1987 school year before either new textbooks or radio lessons were available.

Textbook group - children who used the new textbooks and whose teachers received the teacher training provided by the Primary Education Efficiency Project. This group was tested at the end of the 1988 school year.

Radio and textbook group - children who received the radio lessons in addition to the new textbooks and the teacher training from the Primary Education Efficiency Project. This group was also tested at the end of the 1988 school year.

The data analysts looked at the posttests (with a maximum score of 22) to determine which children would pass math. Since primary school teachers do not always determine a passing grade for each subject, the analysts assessed the data by using various arbitrary passing criteria. See Table V.

Table V Theoretical Pass Rates in Mathematics - Grade 1

	Percentage of Students Passing Math Under Different Passing Criteria				
	Criterion (points out of 22)				
	7	9	11	13	15
Traditional group	38%	32%	26%	17%	10%
Textbook group	59%	44%	34%	23%	13%
Radio and textbook	76%	64%	53%	44%	29%

If the passing criterion were set at 7 points, 59% of the textbooks group (textbooks with some teacher training provided) and 76% of the radio group (interactive radio programs in addition to the textbooks and training) passed. Textbooks and teacher training improved performance considerably because 53% more students passed in this group than in the traditional group. The addition of radio to these interventions provided even more significant gains: twice as many children met the passing criterion when they benefited from textbooks, teacher training and radio lessons. As the data show, no matter what criterion was used, the same pattern emerged: the addition of textbooks and teacher training produced a substantial improvement in achievement and the addition of interactive radio resulted in even more learning. In fact, the higher the passing criterion was set, the greater the relative impact of the radio programs. If the criterion were set at 15 points, for example, nearly three times as many students in the radio group would pass in comparison with the traditional group.

However, despite the measurable impact of the three interventions on children's math posttest scores, the hypothetical "passing" scores cannot be used to predict improvements in promotion rates, which are the real test of improved efficiency. The increase in numbers of children "passing" math did not represent a corresponding increase in the number of children who were promoted; the actual promotion rates for grade 1 in Honduras were:

Traditional group	70%
Textbook group	76%
Radio group	78%

While improved math performance apparently motivated Honduran teachers to promote more children, the increases in promotion rates were not nearly proportional to the performance gains in math verified by test data. In part this is accounted for because mathematics is only one of the major subject areas. Also, there may be other considerations such as age, attendance, class participation, or previous repetition. It is also possible that some teachers have an implicit "quota" system that they are reluctant to alter. Nonetheless, the analysis of the Honduran data for first-grade math indicates that interactive radio does have a positive effect on promotion. And even a modest increase in promotion can have an impact on school efficiency that can offset the costs of the program.

There are a couple of ways in which promotion rates might be increased more in proportion to improvement in learning. The most obvious is to institute national standardized testing and to provide criteria for promotion based on the exam results. Another alternative is to try to understand the culture of the classroom as it relates to promotion decisions. This approach recognizes that higher test scores may not affect the cultural norms that impact on promotion. What are the cultural specific knowledges, attitudes and practices that relate to promotion, and how can those be modified to increase promotion and reduce inefficiencies?

Yet even without these alternative approaches, there is some support from the study in Honduras that an improvement in the quality of education will result in a higher promotion rate and increased efficiency which, in turn, will reduce the cost per primary school graduate. To the extent that repetition is reduced, there will be more spaces available for students to attend school, spaces for either those who would choose not to drop out or for other children who never attended school. Although countries are unlikely to be able to reduce their education budgets, they will now be able to offer more years of schooling to a larger number of children. They will be able to do this without necessarily increasing the total enrollment nor the budget, because students will proceed through the system more efficiently.

6. Samples Costs for Specific Programs

a. Recurrent (Maintenance) Costs

The following costs are based on interactive radio projects, which typically consist of approximately 160 half-lessons per subject per year, plus teacher's guides and other support

materials for the non-broadcast part of the lesson. The recurrent costs per student for these programs usually range from \$0.50 to \$1.00. By allocating these costs as suggested in a previous section, the impact on the Ministry of Education budget can be reduced substantially. When the programs are used to support primary education in the nonformal sector, a study in the Dominican Republic showed that the cost per student would be about half that of traditional schools.²¹

The cost for any radio system will vary depending on each set of circumstances. Computer programs such as that developed by Friend Dialogues can be used to easily estimate costs for any situation.

b. Development and Implementation Costs

The costs for developing or adapting programs to another country vary considerably. The least expensive option is to use programs from another country and leave them virtually unchanged. The most expensive option is to develop totally new programs. An example of the least expensive option is demonstrated by Costa Rica where the Ministry of Education chose to use the interactive radio math series from Honduras with very few modifications.²² The total cost per grade was about \$65,000.

A more expensive option is to make changes in the cultural context of the lessons (e.g. no significant changes in the curriculum) and to re-record all of the lessons. An example of this option is in Bolivia where the interactive radio math materials developed in Nicaragua are being adapted to reflect the culture of Bolivia and then re-recorded. Another example is Lesotho where the Ministry of Education is adapting the radio-English lessons from Kenya. Depending on the need for a resident expatriate advisor, the cost per grade can range from \$100,000 to \$300,000.

If significant curriculum changes are to be made as well, the cost rises to about \$500,000 per course. The bulk of additional costs are for curriculum design and formative evaluation, often requiring more external technical assistance.

²¹ Sanguinetty, Op. cit.

²² Most of that cost is for duplication of tapes and other materials, re-recording about 10% of the lesson segments, and technical assistance, all provided by AVANCE, the Honduran organization that developed the lessons under a contract with the U. S. Agency for International Development with assistance from the Radio Learning Project. The remaining costs are for technical assistance provided directly by the Radio Learning Project.

The most expensive option is to develop a totally new curriculum. This work requires extensive curriculum design, scriptwriting, and formative evaluation. Staff training is crucial, but it takes a long time and is expensive. For these reasons, the development costs may run to \$1,000,000 per year. It usually takes about a year to prepare materials for one grade; in addition, it often takes about an extra year for startup activities and early revisions. Examples of new interactive radio curriculum now under development include the science lessons for grades 4-6 in Papua New Guinea and the mental arithmetic lessons in Honduras for grades 1-3.

7. Cost Saving Possibilities

There are many ways to reduce the costs of instructional radio programs while not sacrificing quality. The list below includes many suggestions for minimizing costs. Some of the recommendations may increase initial expenditure, but would result in savings in the long run.

- a. Don't invest in radio programs unless the target audience is sufficiently large to warrant the investment.
- b. Use radio broadcasts rather than audio cassette tapes for distributing the lessons, except for poor reception areas.
- c. Use or adapt existing programs if at all possible, rather than developing new programs.
- d. Design programs with minimal support materials, and make those materials reusable. For example, the Grade 1 Radio Mathematics lessons developed in Nicaragua provide one worksheet a day for children to write on. These disposable worksheets comprise about 75% of the long-term recurrent costs. To save money, the Grade 2 lessons use no worksheets.
- e. For print materials, use strong bindings and covers.
- f. Reduce the need for teacher training by making the programs easy to use. Provide good teacher's guides and consider preparing special teacher training radio programs to reduce time for face-to-face meetings.
- g. For face-to-face teacher training, develop an effective "cascade" or "multiplier" system whereby training of teachers is done by their head teachers or by district supervisors who, in turn, have been trained by professional staff in radio education. To help make this system work, develop excellent support materials for the trainers including audiotape recordings and, if the circumstances are appropriate, videotape material.

- h. Solicit bids on the international market for good quality radios.
- i. If radio repair facilities are not already available, consider options such as utilizing vocational/technical schools or initiating small entrepreneur activities.
- j. To reduce the costs of batteries for radios, examine solar power or other options such as hand-crank powered radios and tape recorders.
- k. For evaluation and supervision purposes, consider using small vehicles, even motorbikes, rather than larger cars, for transportation where public vehicles are not available.
- l. If cassette tapes are used to distribute programs, consider using a loan/return system so that tapes can be used by other students.
- m. Use existing distribution systems such as school supervisors for sending out materials.
- n. Use computers wisely for all phases of a radio project, from lesson preparation to project maintenance.
- o. Don't resist using outside technical assistance, but don't get more than you need.
- p. Concentrate on on-the-job staff training rather than special courses, especially courses held overseas. Yet, do visit other sites where similar programs are being used.

The following options won't reduce the total cost, but may provide ways of sharing costs so that the programs are affordable.

- q. Sell radios, perhaps at an attractive subsidized price, to the schools and use the proceeds to buy new radios. Radios can be sold directly to teachers, the schools, or parent associations.
- r. Request international donor organizations to contribute to development and implementation costs. Radio programs that promise to improve the quality of education, to improve efficiency, and/or to increase access should be attractive to many donors. Radio programs can also help to address equity issues -- gender, urban/rural, and minorities.
- s. Invite corporations to underwrite program costs such as printing student notebooks or posters for the classroom.

- t. Charge user fees. This is particularly appropriate for adult, nonformal programs.
- u. Negotiate with radio stations to donate broadcasting time. There may be a government policy that requires government and private stations to allocate some time for educational broadcasts.

8. Conclusion

This paper has sought to bring together different economic issues that bear on educational radio programs for use in schools and in nonformal settings. The paper discussed the application of cost-effectiveness analysis, the economies of scale, and the implications of traditional and distance learning alternatives in terms of fixed vs. variable costs. In addition, the paper discussed the potential impact of radio programs on the internal efficiency of school systems, and a method to determine costs and then to allocate those costs among different sources. The paper concluded with examples of costs for developing, implementing and maintaining radio programs and, finally, suggested cost-saving measures.

The successful and cost-effective use of instructional radio must be carefully planned for. This paper does not pretend to provide set answers, but rather to lay out ways of thinking about radio programs from a cost-effectiveness perspective, and to suggest some types of analyses that might help to ensure the best use of this technology.

TABLE II. Effect of radio, textbooks and teacher training on student achievement in developing countries

Country	Sample			Treatment	Design*	Outcome	Effect size	Average effect size						
	Grade	Year	N											
Radio Kenya (Oxford <i>et al.</i> , 1986)	St. 1	1982	2679	Radio Language Arts (RLA)	T/C	Reading test	.32	.53						
						Listening test	.89							
	St. 2	1983	2734	(RLA)	T/C	Reading test	.29							
						Listening test	.66							
	St. 3	1984	2576	(RLA)	T/C	Reading test	.45							
						Listening test	.57							
	Nicaragua (Searle & Galda, 1980)	1	1976	1009	Radio Math	T/C	Math test	1.31	.55					
							1878	1286		Radio Math	T/C	Math test	.88	
2		1977	681	Radio Math	T/C	Math test	.31							
						1978	877		Radio Math	T/C	Math test	.58		
3		1976	836	Radio Math	T/C	Math test	.39							
						1977	733		Radio Math	T/C	Math test	.01		
4		1977	733	Radio Math	T/C	Math test	.01							
						1978	812		Radio Math	T/C	Math test	.58		
Thailand (northeast) (Friend, Galda & Searle, 1986)	2	1980	812	Radio Math	T/C	Math test	.58	.58						
Textbooks Brazil (Armitage <i>et al.</i> , 1986)	2	1981	3906	Use textbook 3 or more days per week	CS/MR	Reading and math test	.47	.34						
		1983	3500				.30							
		1981	1410				.20							
		1983	1402				.39							
		1983	1402				.36							
Nicaragua (Jamison <i>et al.</i> , 1981)	1	1978	1700	1 textbook/student plus teacher guide	T/C	Math test	.36	.36						
						Philippines (Heyneman <i>et al.</i> , 1984)	1		1977	3200	1 or 2 textbooks/student	Science test	.56	.40
												Math test	.31	
												Pilipino test	.33	
2	1977	2825			Science test	.56								
					Math test	.41								
					Pilipino test	.21								
Thailand (Lockheed <i>et al.</i> , 1987)	8	1981	4030	Frequent use of textbook by teacher	LS/MR	Math test gain	.06	.06						
Teacher Education Brazil (Armitage <i>et al.</i> , 1986)	2	1981	3906	In-service training (Logos II)	CS/MR	Student reading & math test	-.07	.09						
						1983	3500			.25				
						1983	1402			.10				
	1	1981	3906	Four years primary education	CS/MR	Student reading & math test	.07	.21						
						1983	3500			.28				
						1983	1410			.27				
	4	1983	1402			Student reading & math test	.21							
						1983	1402			.21				
	2	1981	3906	Three years secondary education	CS/MR	Student reading & math test	.06	.16						
						1983	3500			.21				
4	1981	1410			Student reading & math test	.20								
					1983	1402			.16					
Thailand (Lockheed <i>et al.</i> , 1986)	8	1981	4030	Each semester post-secondary math education	LS/MR	Student math test	<.01	<.01						

Note

* T/C=treatment/control study design; CS/MR=cross-sectional survey/multiple regression analysis; LS/MR=longitudinal survey/multiple regression analysis.

TABLE III. Efficiency of six educational policies

	Effect size*	Cost per-student	Efficiency ^b
Textbooks			
Brazil ^c	.34	\$1.65	.21/\$1
Nicaragua ^d	.36	\$1.75	.21/\$1
Philippines ^e	.40	\$.27	1.48/\$1
Thailand ^f	.06	\$.25	.24/\$1
Radio education			
Kenya ^g	.53	\$.40	1.33/\$1
Nicaragua ^h	.55	\$1.80	.31/\$1
Thailand (Northeast) ⁱ	.58	\$.44	1.31/\$1
Teacher education			
Brazil (4 yrs primary)	.21	\$2.21	.09/\$1
Brazil (Logos II)	.09	\$1.84	.05/\$1
Brazil (3 yrs secondary)	.16	\$5.55	.03/\$1
Thailand (additional semester postsecondary)	<.01	\$.09	.06/\$1
Technical-Vocational Secondary^j			
Colombia (INEM)	.39	\$ 98.00	.40/\$100
Colombia (tech-voc.)	.33	\$376.00	.09/\$100
Tanzania (commercial)	.50	\$272.00	.18/\$100
Tanzania (technical)	-.37	\$561.00	-.07/\$100
Tanzania (agricultural)	-.20	\$375.00	-.05/\$100
Cross-Age Peer Tutoring^k			
United States	.73	\$212.00	.34/\$100
Cooperative Learning^l			
Israel	1.40	\$85.00	1.65/\$100

Note:

- * The effect size is the average score difference between treatment and control groups divided by the standard deviation of the control group (Glass, McGaw & Smith, 1981).
- ^b Efficiency is the effect size divided by the per-student cost.
- ^c Source for Brazil: Armitage *et al.* (1986).
- ^d Source: Jamison *et al.* (1981) for effect; Wells & Klees (1978) for cost.
- ^e Source: Heyneman *et al.* (1985) for effect; Searle (personal communication) for cost.
- ^f Source: Lockheed *et al.* (1987).
- ^g Source: Oxford *et al.* (1986) for effect; Kemmerer & Friend (1985) for cost.
- ^h Source: Searle & Galda (1980) for effect; Wells & Klees (1978) for cost.
- ⁱ Source: Friend *et al.* (1986) for effect; Galda (1985) for cost.
- ^j Source: Psacharopoulos & Loxley (1985).
- ^k Source: Levin *et al.* (1984).
- ^l Source: Sharan & Shacher (1986).

WORKSHOP ON USING RADIO TO SUPPORT TEACHERS

Maurice Imhoof
Academy for Educational Development

OBJECTIVES:

Participants will review key factors in developing effective and relevant activities in support of teachers.

1. Relationship between education, training, and helping.
2. Assessing what teachers need.
3. Defining the content of support activities.
4. Setting priorities.
5. Selecting the appropriate helping strategies.

SPECIFIC ACTIVITIES:

1. Education vs. training vs. helping

Defining education, training, and helping. Setting limits on what can be accomplished in support activities. Participants will develop the guidelines for what can effectively be accomplished by specific support activities or programmes.

2. Assessing teacher performance and needs

Drawing on the critical issues facing education discussed on the first day of the conference, participants will develop strategies for assessing teachers' needs. Specifically, they will design tools for looking at teacher's classroom behavior which will show the areas for which help is needed.

During this part of the workshop, we will identify the various types or levels of teachers that participants hope to work with and their major characteristics. For example: education, experience, previous training, supervision, resources, etc.

3. Selecting the medium for support activities

Participants will discuss various approaches to helping teachers and their advantages. Participants' experience with these approaches will be especially welcome.

Participants will develop guidelines for making the best use of media for helping teachers based on teachers' needs, cost constraints, human resources, and effectiveness of the delivery system.

4. Content

This part of the workshop will stress guidelines or principles for identifying the content of support activities.

Although specific content for in-service training will be too narrow for this workshop, the participants will discuss the use of radio in support of teachers teaching by radio. For example: effective teacher behavior, getting pupils to participate, post-broadcast activities, etc.

5. Setting priorities

Since there is always more need for education, training, and helping than resources or time will allow, the participants will develop guidelines for setting priorities based on informed analysis of their own situations.

EVALUATION OF EDUCATIONAL RADIO PROGRAMMES WORKSHOP

Prof. George Eshiwani
Jomo Kenyatta College of
Agriculture & Technology, Kenya

The workshop will focus on six main issues:

1. Why Evaluation

- a) To determine if the instructional goals have been achieved.
- b) To assist in determining the quality of education.
- c) Evaluation for funding purpose.
- d) Evaluation as a control mechanism.

2. Types of Evaluation

a) Formative Evaluation:

Question to be answered:

"Is each segment of the radio programs
teaching effectively?"

b) Summative Evaluation:

Question to be answered:

"Did the instructional program have the desired
effect?"

3. What is to be evaluated
 - a) Reception of radio messages
 - b) Availability of materials
 - Receivers
 - Batteries
 - Back-up written materials
 - c) Presentation
 - d) Achievement
 - e) Efficiency: Inputs/Outputs
 - f) Short-term and long-term impact of the radio language
 - g) Cost-effectiveness
4. How to Evaluate: Methodology
 - a) Questionnaires
 - b) Tests
 - c) Interviews
 - d) Observation
5. Who should carry out evaluation:
6. Evaluation and policy-making.¹

¹Teaching English by Radio Interactive Radio in Kenya, by Imhoof M. and Christensen, P.R., Academy for Educational Development, Washington, D.C., 1986, pp. 173-227.

AFRICAN CONFERENCE ON RADIO EDUCATION

LIST OF PARTICIPANTS

22 - 26 January, 1990

Harare, Zimbabwe

Name	Address
Ashley Nikki	Wildlife Conservation of Zambia P O Box 30255 10101 Lusaka Zambia
Belding, Barbara	USAID/Botswana IGI Building P O Box 2427 Garborone, Botswana
Bennett, J.W.	Principal Superintendent Ministry of Education (EDSAC), P O Box M45 Accra, Ghana
Bopoto, Fatima	Heath Education Officer Ministry of Health P O Box 8204 Causeway, Harare Zimbabwe
Brett, P M	Assistant to the Principal Zdeco P O Box 316 Harare
Chikwinya, K J M	Director Audio Visual Services Prim y & Special Education P O Box MP 140 Mt Pleasant, Harare

Chisamba, Rebecca

Audio Visual Services
P O Box MP 140
Mount Pleasant
Harare, Zimbabwe

Christensen, Philip

Basic & Non-Formal
Education Systems Project
c/o American Embassy
Kingsway, Maseru
Lesotho

Clarke, Edwin

Director of Instructional
Materials, Development &
Evaluation, Ministry of
Education
P O Box 9012
Monrovia, Liberia

Corrales, Carleton

General Manager
Avance
Apartado Postal 2040
Tegucigalpa, Honduras

De-Goshie, Joe

Director, National Education
Technology Centre
Federal Ministry of Education
Hospital Road
P M B 2027
Kaduna, Nigeria

Dolcetti, Lucia

UNESCO
Basic Education
P O Box 435 HG
Harare

Eshiwani, George
Professor

Principal
Kenyatta University
College of Agriculture
P O Box 62000
Nairobi, Kenya

Gcwabe, Sarah
Curriculum Research
Officer, Ministry
of Education
P O Box 1126
Maseru, Lesotho

Ginindza, Isaac
Principal
Emlatini Development Center
P O Box 547, Mbabane
Swaziland

Gundani, C M
D C E O
Ministry of Education
& Culture
P O Box 8022
Harare, Zimbabwe

Gwata, F
D C E O
Ministry of Education
& Culture
P O Box 8022
Harare, Zimbabwe

Howlett, Jessie
Audio Visual Services
P O Box MP 140
Mount Pleasant
Harare, Zimbabwe

Imhoof, Maurice
Basic & Non-Formal
Education Systems Project
c/o American Embassy
Kingsway
Maseru, Lesotho

Jaji, L M Dr
Lecturer & Chairman of
Educational Administration
University of Zimbabwe
P O Box MP 167
Mt Pleasant, Harare
Zimbabwe

Jallah, B Raymond Deputy Minister of Education
Ministry of Education
P O Box 3161, Monrovia
Liberia

Jellah, G K Ministry of Education
P Bag 328
Lilongwe 3, Malawi

Karue, Mary Institute of Education
P O Box 30231
Nairobi, Kenya

Kashambwa, A C Education Officer
Ministry of Education
& Culture
P O Box 8022
Harare, Zimbabwe

Kelebonye, David Radio Producer
Non-Formal Education
Botswana

Mabuza, Olga Curriculum Designer
National Curriculum Centre
P O Box 73, Manzini
Swaziland

Manyame, C Programme Community Officer
UNICEF, Box 1250
Harare, Zimbabwe

Matewere, B Senior Radio
Announcer/Producer
Zimbabwe Broadcasting
Corporation
P O Box 9048, Mbare
Harare, Zimbabwe

Mills, M
Economist
World Bank
P O Box 2960
Harare, Zimbabwe

Mpumilwa, Leonard
Ministry of Education
P O Box 9121
Dar-Es-Salaam
Tanzania

Mulombe, M P
Controller for Educational
Broadcasting Services
P O Box 50231
Lusaka, Zambia

Muwowo, Bishop G
Senior Producer for
Schools Broadcasting
Malawi College of
Distance Education
P. Bag 302
Malawi

Ndlovu, S Dr.
Principal
ZDECO, P O Box 316
Harare, Zimbabwe

Ngailo, John
Ministry of Education
Institute of Adult Education
Tanzania

Nhiwatiwa, Naomi
UNICEF
Kenya

Nyamusana, Mary
Education Radio, TV, and Co-ordinator
Radio Learning Project
c/o Catherine Gaudet
PF 4th Ida Education Project
Ministry of Education
Crested Towers, Uganda

Sanogo, N

Radio Broadcasting for
Teachers, Ministry of
National Education
Mali

Sikhosana, M

Zimbabwe

Sitima, T M

Chief Inspector of Schools
Ministry of Education
Kenya

Sow, Aliou

Chief, Radio Project/IPN
Ministry of Education
BP 823, Conakry
Guinea

Tchombe, Therese, Dr

Inspector of Pedagogy
Secondary Education
Ministry of National Education
B P 1600
Cameroon

Teixeira, Marco

UNICEF
P O Box 4713
Maputo, Mozambique

Tembe, Abner

Director, Swaziland
Broadcast & Information
Service, P O Box 338
Mbabane, Swaziland

Tholen, Morgan

(Swedish Production Assistance)
Head of Educational Broadcasting Unit
P Bag 0067, Gaborone
Botswana

Otto, Aron
Lecturer & Head
Audio Visual Aids Center
Institute of Teacher Education
Uganda

Paneng, Bernard
Deputy Principal
Secretary for Education
Ministry of Education
P O Box 47
Lesotho

Pedrosa, Nazare Dr.
University of TRS of
the University of Brasilia
Couboloant for the Moz.
mined Government
258 Ave. Julius
Nyerere, Maputo

Pilane, Queen
Head, Educational
Broadcasting Unit
Radio Botswana
P O Box 10108
Gaborone, Botswana

Robinson, Jennet
Peace Corps Director
Mbabane, Swaziland

Rwambiwa, J P Dr
Chairman, Centre for
Educational Technology
University of Zimbabwe
Mount Pleasant, Harare
Zimbabwe

Sakoane, Ramauoane J
Acting Audiovisual
Supervisor, IMRG
P O Box 1307
Maseru, Lesotho

Tibanyendera
Father

Ministry of Education
Crested Towers
P O Box 7063
Kampala, Uganda

Tilson, Thomas Dr

Director Radio Learning Project
Education Development Center
55 Chapel Street
Newton, Ma 02160
U S A

Vandyck, Agnes

Assistant Director of Education
Ministry of Education
P O Box M45, CEDSAC
Accra, Ghana

Wood, India

151 Walden Street
Cambridge, Ma 02140
U S A

RESULTS OF A RLP SURVEY ON EDUCATIONAL BROADCASTING IN AFRICA

COUNTRY	SUBJECTS	GRADE LEVEL	HRS/WEEK	RESPONSIBLE AGENCY	STAFFING	LISTENERSHIP	RADIO COVERAGE IN COUNTRY	FUNDERS	% OF CLASSROOMS WITH RADIOS	WHAT INSTITUTION TRANSMITS PROGRAMS? AT WHAT COST?
BOTSWANA	F English, social studies, science	Standards 2-7	18	The Educational Broadcasting Unit with the curriculum Development Unit and Evaluation Dept.	6 producers	612 primary schools	Approximately 75% by shortwave	Botswana Gov't SIDA (1989-1992)	Approx. 90% of primary schools	Radio Botswana - no cost to the Ministry of Education
	N - Rebotseng-Ask us - Ao a Itae-Do You Know? - Literacy radio, correspondence lessons	literacy clientele and the general population	2	The radio staff of the Dept. of Non-Formal Education under MOE	3 radio producers (full-time) 3 course writers (part-time)	The whole country	Roughly 75% by shortwave	Botswana Gov't SIDA (1989-1992)	Approx. 90% rural and urban audiences have radio sets at home	Radio Botswana - no cost to the Ministry of Education
CAMEROON	F									
	N health, agriculture, law counseling, language, economics, political issues, teacher education.	The general population at different levels and groups	6	Government of Cameroon	3	A considerable proportion of the population	95%	Government of Cameroon	---	---
GHANA	F English language, French, Ghanaian languages, education, science, social studies, cultural studies	Radio 1: primary schools; junior secondary schools Radio 2: secondary schools teacher training colleges	Radio 1: 60 hrs	Curriculum Research & Development Division, Ministry of Education and the Ghana Broadcasting Corporation	14 staff members of Schools Broadcasting Unit	Approx. 2.3 million primary & junior secondary school pupils; 70,000 basic education teachers; 4000 secondary and teacher training college students	50%	Ministry of Education & the Ghana Education Service	95% primary and secondary schools have radios	Ghana Broadcasting Corporation (estimated cost \$2.2 million/yr (1989 costs))
	N Yet to start		Radio 2: 60 hrs							
GUINZA	F social sciences (history, geography), French, natural sciences and mathematics	5 and 6 (primary)	1	Radio Scolaire de l'Institut Pédagogique National	6	5th and 6th graders and the public	No definitive study has determined this	UNICEF, ACCT, the Government	students listen to lessons at home	Radio Diffusion Nationale
	N									
LESOTHO	F English	Standards 1, 2, & 3	7 1/2	English division of the National Curriculum Development Center	teachers of Standards 1-3	all standards 1-3 pupils	approximately 85%	USAID and BANFES Project	approximately 90%	Instructional Materials Resource Center (cost borne by BANFES Project)
	N									
SWAZILAND	F English	Standard 1	2 1/2	USAID and Ministry of Education	7	---	97%	USAID	20 schools	Swaziland Broadcasting Service (no cost to MOE)
	N									
TANZANIA	F science, English, Swahili, geography, political education, history, domestic science	primary, secondary schools and teachers colleges	17 1/2	Ministry of Education	7 teachers	1 1/2 million	70%	Ministry of Education	primary schools - 30% secondary schools - 55% teachers colleges - 90%	Ministry of Information and Broadcasting Service
	N									
ZAMBIA	F English, history, geography, science, home economics, social studies, and civics	Standards 1-2	21 hours 50 min.	Educational Broadcasting Services	11	525,000 pupils	45%	Ministry of Education	25%	Zambia National Broadcasting Services (at no cost to schools)
	N									

KEY: F = Formal Setting / N = Non-formal Setting