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ABSTRACT

For a developing nation such as Zambia, quality education, utilization of manpower, and proper training are priority problems. Therefore a study was conducted to establish and document the need for a well-planned, staffed and executed learning resource center to solve some of that country's learning problems. Basic facts about the country of Zambia were collected. A review of the literature and a survey of learning resources center organization and development in developed countries was conducted. Based on the identified needs of the country of Zambia, a basic philosophy gathered from the literature, and the experiences of developed countries, a detailed plan for a phased program to establish a learning resource center for Zambia was prepared. Recommendations included means of developing a philosophic base, purpose, organizational structure, plan, program, personnel, physical facilities, and time line of events. A bibliography is appended. (SK)

EVOLVING A MODEL LEARNING RESOURCE CENTER FOR A DEVELOPING COUNTRY (ZAMBIA)

by

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DISSERTATION

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CHAPTER I

Introduction to the Study

Every country in this world is facing a myriad of problems and dissatisfactions. Rapid technological advances in the fields of communication and transportation have brought people closer. This proximity has done two things:

1. It has focused attention on progress in one country as contrasted with the lack of progress in other countries.
2. It has, because of rapid dissemination of information, raised the level of awareness in terms of possibilities, therefore raising expectations and demands of the people in the developing countries.

This phenomenon affects the educational institutions, no less than the other institutions in the society. As Chadwick and Morgan state:

> Most educators, political leaders and ordinary citizens of almost any nation in the world are in agreement on at least one issue - the inadequacy of their educational system's response to the needs of their society . . . Societal problems, advancing technology, growing urbanization and rapid changes in the nature of manpower needs have rendered obsolete and irrelevant much of what is traditionally honoured in conventional practices . . . However, for a developing nation, which may be precariously situated between near-tribalism on the one hand and a modern economy on the other, failure of the education and manpower needs of the country can have tragic consequences (Chadwick & Morgan, 1971).

For a developing nation, quality education, proper training and utilization of its manpower are some of the priority problems. The purpose of this study is twofold. First to establish and document the need for a well planned, staffed and executed Learning Resource Center to help

solve some of the country's educational problems; second it represents an attempt to collect and analyze available data relevant to generating a set of recommendations that will help to establish such a facility. Specifically, these recommendations will take the form of developing philosophic base, purpose, organizational structure, plan, program, personnel, physical facilities, time line of events, etc.

What Is a Developing Country?

For the purpose of categorizing countries into the developing and the developed, a general yardstick established by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the United Nations can be adequate for our purpose.

> UNESCO has suggested, as an immediate target, that a country should aim to provide for every 100 of its inhabitants at least the following facilities:
> Ten copies of daily newspapers;
> Five radio receivers;
> Two cinema seats;
> Two television receivers.
> As many as 100 states and territories in Africa, Asia, and Latin America fall below this very low "minimum" level in all four of the mass media. These countries have combined population of 1,910 millions, or 66 percent of the world total . . . The above evaluation of development of the mass media in some 120 countries corresponds very closely with the United Nation's designation of countries which are generally underdeveloped. With due regard for the limitations of the method of classification used, the United Nations considers that a country is underdeveloped if the average per capita income is less than $300.00 annually. One hundred and one countries are found to be below this income level and an additional 16 countries fall within the $300.00 to $400.00 range (UNESCO, 1962, p. 16).

Problems of Developing Countries

Developing countries in Africa face a number of problems in the field of education:

> The most acute problems appear to be the shortage of well qualified African science teachers, and a situation in most countries

which leads to a high turnover of teachers (UNESCO, 1967, p. 4). To overcome this shortage of qualified teachers, many African countries have to hire "expatriate" teachers from other countries. These teachers mostly come from the Asian countries, the U.S.A., England, Canada, and other European and Middle East countries. Teachers coming from the U.S.A. are mostly under the Peace Corps program, while those from England are under the Voluntary Service Overseas (V.S.O.) program. UNESCO is playing a major role in making many African countries self-sufficient regarding their need for their own Science and Mathematics teachers. Shortage of teachers is not the only problem facing African countries. These countries are faced with many difficult problems, as found in a study by the International Council for Educational Media:

> Among the many difficult problems encountered (by developing countries) is the extreme lack of money and experienced teachers, trained technical personnel, material and equipment, maintenance and repair facilities, electricity supply and means of transportation. There are millions of illiterates and children who have no formal schooling. Schools are poorly equipped and only simple teaching aids such as textbooks, blackboards and charts are available (International Council for Educational Media, 1969, p. 59).

These problems can be briefly summarized as follows:

- High percentage of illiteracy;
- Lack of awareness of the problems of health and hygiene;
- Dearth of trained teachers;
- Inadequacy of trained teachers;
- Scarcity of aids and equipment;
- Non-suitability of existing instructional material;
- Lack of maximum utilization of existing resources because of poor transportation, communication facilities, etc.;
- Limitation in the selection of instructional material because of shortage of finance and foreign exchange.

Attempts To Solve the Problems

In the past, attempts have been made to export, intact, the mode and practice of the educational model of one advanced country to a developing country, and they have not been successful. As Chadwich and Morgan state:

> This approach makes the assumption, where the United States is the exporter, that an educational system that was reasonably adequate for the United States up through the 1940's is equally suitable for Brazil, Korea or Ghana in the 1970's. Only now are we acquiring evidence as to the adequacy of our own educational programs from the past World War II period - and this evidence is distressing to many educational leaders (Chadwick & Morgan, 1971, pp. 49-53).

Thus, bodily transfer of educational programs of one nation to another nation with altogether different ways of life, economy and culture is not the solution. The educational programs to be effective in any developing country, have to take root in the soil of the country concerned, grow in the environment of that country and be reared and pruned by the people of that country.

One of the Possible Solutions

The problems mentioned earlier can be solved in a number of ways. Different countries have tried different techniques. A recent trend in developed countries is to establish a media center, also known as a Learning Resource Center. Such centers have been useful in providing the following:

> Consultant services to improve learning, instruction, and the use of media resources and facilities;
> Instruction to improve learning through the use of printed and audiovisual resources;
> Information of new educational developments;
> New materials created and produced to suit special needs of students and teachers;
> Materials for class instruction and individual investigation and

exploration;
Efficient working areas for students, faculty, and media staff;
Equipment to convey materials to the student and teacher
(American Library Association & National Education Association, 1970, p. 4).

Needs of developing countries are similar and if such a center is established in a country, it may be able to solve some of its acute problems. With that in mind, the writer has developed a model plan for evolving a Learning Resource Center for a developing country.

A Learning Resource center represents a specific structuring of resources, functions and processes which help the learner to learn and the teacher to teach. Combined into a single system, they can be incorporated into multiple opportunities for skillful and expert observation of results.

Use of multi-media for instructional purposes has gained acceptance in African countries. Their usefulness received an honourable recognition at the Tananarive (Madagascar) conference of 1962 on Higher Education in Africa. Part of the report of the conference states:

> Higher education in Africa must assume a positive role in the improvement of its educational system . . . the responsibility to do so will be realized through the preparation and publication of textbooks and of teaching materials including laboratory specimens, programmed learning, charts, maps, filmstrips, tapes, records and other audiovisual aids.

Another conference held in Addis Ababa in 1963 also emphasized the need to develop new approaches that would improve educational quality in developing countries of Africa. The conference agreed that:

> One aspect of the effort to improve educational quality is the development of new aids for teaching. The blackboard and the textbook have done good service for half a millennium, but that does not mean that the presentation of information cannot profit from a little redesign.

The Need for Study

The Learning Resource Center is a comparatively new concept in the educational world of the west. In the developing countries it is even newer. Instructional material for a teacher in a developing African country is sometimes scattered all over the country, and it always needs an extra effort, time and energy to bring these materials together at the right time in the right place. Teachers sometimes feel reluctant to make the effort, or lose interest, and as a result the student suffers. Also, some of the equipment and material may be new to the teacher, and he might not have the technical skill to use them. The teacher will not hesitate to use them if:

1. The difficulty of obtaining instructional materials is reduced or removed.
2. If teachers are consulted regarding their particular needs of instructional materials for specific topics.
3. Provision is made to enable the teacher to get the technical skill and know how to use them.

As a result the teaching learning process will be more efficient and effective.

African countries are facing the problem of a high percentage of illiteracy, which in turn is the stumbling block for their development. The Learning Resource Center of the country, if properly developed and programmed, can help in waging an effective war against illiteracy through in-service and adult (social) education programs.

UNESCO has been a champion for the cause of educational progress in developing countries through its various projects for elementary and

secondary teacher training. Of late, UNESCO has emphasized the Learning Resource Center in its newly developed projects. Dr. G. Crank, Acting Chief, Teacher Education Section, UNESCO, in his communication to Dr. John Childs, Assistant Dean, College of Education, Wayne State University, wrote:

> We believe that in developing countries this (the Learning Resource Center) is one of the weakest activities, and is needed to bring about social and economic development.

Situation in Zambia

The Learning Resource Center should not only help the teaching-learning process, but be an important instrument to bring about social and economic development. This should be done in Zambia which is a developing country according to UNESCO and United Nations "minimums". In a country like Zambia:

> According to the latest available information (April, 1971) at the Ministry of Education, 88 percent of the secondary school teaching force was expatriate on January 1, 1971. Since Zambia achieved independence, the teaching force at secondary level has paradoxically become less Zambian because of the demands made on its personnel by Government departments and mining industry (Report on project results, 1971, p. 11).

Learning Resource Center for Zambia

Zambia faces an acute shortage of qualified teachers. At the same time, there are other shortcomings such as the high percentage of illiteracy and the scarcity of aids and equipment to attack the problem of illiteracy. A central organization like a Learning Resource Center that can take care of the requirements, through various processes like identifying needs, acquiring suitable material for such needs, locating the local resources and talents, and making maximum use of the resources, could be

an answer. This central organization should be able to assume a major responsibility in the pre-service and in-service education of teachers as well as assume leadership in acquiring, supplying and producing instructional materials for the country.

Such an organization, instead of being satisfied with its minimal function of storing and checking out instructional material to the educational institutions, should go much further than that and become involved in the social and economic development of the country. This center should be able to organize well phased-out programs of: Pre-service training of teachers; In-service training of teachers.

As reported earlier, one of the difficult problems encountered by developing countries is the lack of money. Even more acute is the lack of hard currency which is in high demand for the various priority projects for the development of the country. It is a common practice in the developing countries to import instructional material. This procedure entails many things like, drain of hard currency, delay in receiving material, scarcity of material, non-suitability of the material. In such circumstances, can a Learning Resource Center in a developing country look into this aspect of the economy as well?

Purpose of the Study

The purpose of this dissertation is to evolve a model plan and program for a Learning Resource Center for Zambia, which is a typical developing African nation. This objective may be divided into the following component objectives:

1. To trace the history of general circumstances which led to the establishment of Learning Resource Centers in developing countries.

2. To trace the history of general circumstances which led to UNESCO's interest in the Learning Resource Center in developing countries.
3. To relate these circumstances to a specific country, viz., Zambia.
4. To chart out a phased program of operation for a Learning Resource Center in Zambia.
5. To describe the organization and functions of potential Learning Resource Centers in Zambia.
6. To describe the phased programs for pre-service and in-service training of teachers.
7. To develop a plan for instructional material production programs.
8. To highlight such important aspects as the scope, organizational structure, staff needs and job descriptions, budgeting, storing, classifying and retrieving procedures, field servicing, production program, etc., that should be looked into while adopting this model for another developing country.

Definition of Terms

EVOLVE: To develop by gradual changes--by phased planning.

LEARNING RESOURCE CENTER: A Learning Resource Center is that system of functions and processes which helps the learner to learn and the teacher to teach.

DEVELOPING COUNTRY: A country which falls below the "minimum" set up by UNESCO regarding mass media. The "minimum" for mass media for every 100 of the country's inhabitants is: Ten copies of daily newspapers; Five radio receivers; Two cinema seats; Two television receivers. The United Nations considers that a country is under-developed if the average per capita income is less than $300.00 annually.

MODEL: A schematic developed so as to serve as a guideline in the process of developing a Learning Resource Center. This will give instructions and procedures for every determining specification for such a project.

Assumptions

1. The Learning Resource Center will provide the resources to update teachers through its in-service and pre-service teacher training programs.
2. The Learning Resource Center can be economical, especially in developing countries, by making maximum use of its resources and by avoiding unnecessary duplication of resources.
3. The Learning Resource Center could play an important role in vitalizing the education of the country by making it interesing and effective.
4. The Learning Resource Center can be an answer to the mammoth problem of illiteracy.
5. The Learning Resource Center can bring about social and economic development.
6. The Learning Resource Center can be a fountainhead of new ideas and hence can bring about change.

Reasons for Selecting Zambia for this Study

This study is proposed to develop a plan for a model Learning Resource Center in Zambia. The following factors were instrumental in the selection of this country:

1. Zambia is a developing country, according to the UNESCO "minimum" in relation to the mass media provision per 100 of its inhabitants. It also falls below the United Nations "minimum" of $300.00 per capita income.

2. Zambia is rich in natural resources, particularly copper. The economy of the country is becoming stronger, and thus it can afford to spend more money on education.
3. The present Zambian government has been in power since independence in 1964. Such stability has allowed continuity of educational policies.
4. The present government is very much interested in educating Zambian youth. This is evident from the fact that the government is establishing more and more educational institutions and making provisions that education will reach even to the most remote villages as well.
5. UNESCO has been interested in the teacher-training programs in that region before the birth of Zambia, and recently, the UNESCO project to train teachers for the country has entered the second five year phase, which shows UNESCO's continued interest and the country's existing need for the project.
6. Rapidly changing governments do not allow educational programs to take roots, but in Zambia, the stable government makes it possible that the effort made will not be wasted.
7. Recently, there has been a rapid rise in the student enrollment. As a result, the government has started many new schools. This has resulted in a shortage of teachers, necessitating hiring of expatriate teachers.

Limitations of the Study

1. Sources of information are limited to available official material from UNESCO, the government of Zambia, and existing published material in the U.S.A.

2. Libraries are not included in this study as they are already existing and established institutions. The Learning Resource Center should be established as a mostly non-print materials center. Later on, depending upon the cooperation of the librarians, an integrated approach may be tried.

Methodology

An attempt was made to collect exhaustive data on Zambia, the country under study. This data included historical, cultural and educational data, projected educational growth, demographic reports, economic forecasts, manpower requirements, projected manpower needs, educational fiscal data, etc.

Based on this data, needs of the country, and experience of developed countries, a model plan for evolving a Learning Resource Center was developed.

The study was undertaken in the following phases:

PHASE I

To identify the following through collecting and classifying information:

a. Physical features:

Geographical location--conditions and related information about the country--area of the country

b. Demographic data:

Population--number of students at various levels of education--estimated projected growth in student enrollment--number of local teachers vis a vis expatriate teachers

c. Educational needs:

State of affairs before independence--state of affairs in 1964--

requirements of the society at that time--position in 1970, 1971, 1972--extent to which are the requirements of the society fulfilled --tasks ahead

d. Problems:

Problems involved with expatriate teachers, viz., mobility, cost, foreign exchange, other privileges

e. Instructional material:

Their position, use, and extent- number of schools and their distribution, any centralized agency for instructional materials if any -its scope and extent.

PHASE II

To study existing literature on the Learning Resource Center in developed and developing countries to find their scope and extent in education at various levels.

PHASE III

A review of Learning Resource Centers, their plan, program and problems will be conducted in and around Detroit, Michigan. The following characteristics of Learning Resource Centers will be used to select potential visitation sites:

1. Level of instruction
2. Urban, suburban and rural
3. Volume of clientele
4. Educational achievement level of clients

PHASE IV

Based on the information obtained above a plan and program for proposed

model Learning Resource Center in Zambia will be developed:

a. Learning Resource Center for Zambia:

Rationale for a Learning Resource Center in Zambia--its purpose, extent and scope.

b. Functions of a Learning Resource Center in Zambia:

Storehouse of instructional material to include distribution center of instructional materials for the satelite centers in the country, central purchasing center of instructional materials, coordinator of requirements of the country, estimator of future needs of the country, producer of isntructional material suitable to the needs of the country, adopter and adapter of instructional material, improvisor of instructional material, producer of prototype material using local materials and resources, employer of ways and means to identify local resources and talents, identifier and exhibitor of local culture.

c. Organization and management of a Learning Resource Center in Zambia to include: staffing pattern, job decriptions, qualifications, plan of a Learning Resource Center, building and floor plans, budgeting, acquiring procedure sources, involvement of faculty, society, government and other members of power structure, standards and needs regarding space, quantity, etc.

d. Program of a Learning Resource Center in Zambia:

Program for in-service training of teachers, pre-service training of teachers, teacher preparation, production programs, programs for evaluating, adopting and adapting instructional material, programs for locating and using local resources and talents.

PHASE V

Develop a tentative plan and phased program for Zambia, keeping in view needs, resources and conditions of Zambia.

Summary

In this chapter a rationale for the study is developed. Basic parameters of the study also have been laid out.

Chapter II deals with basic facts about the country of Zambia. These facts will be useful in clearly identifying the problem facing the country and their magnitude. An attempt will be made to look into the future, so as to estimate the growing needs of the country.

Chapter III will deal with the review of literature in the field. Information found in the review of literature will be useful as guiding principles for developing a philosophy of Learning Resource Centers in Zambia.

Chapter IV will deal with the experiences of developed countries in the organization and management of Learning Resource Centers. This experience will be useful while a plan and program for Learning Resource Centers in Zambia is developed.

Based on the basic facts and identified needs of the country discussed in Chapter II, on the basis of philosophy developed as a result of review of literature and with the help of experiences of developed countries, a detailed plan and program of organization and management of Learning Resource Centers for Zambia will be developed in Chapter V.

CHAPTER II

Basic Facts About the Country: Zambia

Introduction

Prior to World War II, the African continent, for the most part, was believed to be a mysterious and fascinating land. People knew Africa as the "dark continent." It had diamonds and gold, ivory and spices, coffee and cocoa, elephants and lions, and pigmies and cannibals.

Materialistic foreigners were only interested in the material possessions of the continent and its slaves to further their materialistic aspirations. So the world of foreign powers allowed Africa to go its own way and did little to bring the people of Africa abreast of latest developments. But, as noted earlier, technological developments made the world shrink and modern communication techniques brought the world to their doorsteps. After World War II there was enough awakening on the continent and one after the other, colonial countries demanded independence.

With independence came responsibility, and not being properly initiated, some countries stumbled, then stood to stumble once more, and the process continued. High rates of illiteracy, poor economy and changing governments were some of the acute problems of upcoming nations. Education had and still has to play a major role in that phenomenon. Many African nations today are still waging wars against illiteracy, weak economy, health and hygiene problems and other social ills. One such country is Zambia.

Every country in the world has a different identity. It has its own plans and programs, its own history and aspirations, its own problems and its own proposed solutions. Before suggesting any educational innovation, it may be worthwhile to know something about the country, its physical characteristics, demographic statistics, educational structure, future manpower needs, etc. These pieces of information will be able to make us more practical in our suggestions rather than theoretical. This information can keep our feet on the ground, while suggesting any educational change. In this chapter we will try to know more about the country under study--Zambia, its geography, background, history, economy, educational structure and system, educational administration and organization, educational services, educational trends and problems and about education in Zambia today and tomorrow.

Geography of Zambia

The geography of a country places many physical constraints on the educational system of the country. Temperature and humidity may pose a major threat to the equipment and optics, and their storage. Topography may dictate the road system, thereby affecting the transport of instructional material to the various educational institutions of the country and the distribution of the broadcast system. The concentration of population in one area might affect the system of utilization of instructional material. Thus geography of a country can play an important role in the planning of a Learning Resource Center.

Zambia is a land-locked country in south central Africa (known as Northern Rhodesia until independence in 1964.) It has Congo to its north, Tanzania and Malawi to its east, Rhodesia and Botswana to its south and

Angola to its west. At the end of 1969, its population was estimated at 4.2 million, of which 70,000 were Europeans, and 12,000 Asians and other immigrants. Zambia was a British colony from 1886 to 1964, hence most of the Europeans are British. The Africans are of Bantu origin and are divided into various ethnic groups. It has an annual growth of 3.1 percent, and density of population is 14 inhabitants per square mile. Zambia covers an area of 290,587 square miles of high plateau with elevation ranging from 3,000 to 4,500 feet above mean sea level.

The subtropical climate of Zambia ranges from 43° to 53°F in winter (May through August) and from 80° to 100°F in summer (September through March.) The mean rainfall is concentrated from October into April with an average of 25 to 30 inches a year.

Economy

All educational plans and new programs have financial implications. Countries with limited resources always have found it difficult to implement new programs, thus economy of a country is the backbone of any educational innovation. A Learning Resource Center needs a sizable amount of money in the initial stages, some of it in foreign currency. If a country has an up and coming economy, part of which is easily convertible to foreign currency, the chances are its new educational programs have a better chance of success.

Copper is the backbone of Zambian economy. Zambia is the third largest producer of copper in the world after the U.S.A. and the Soviet Union. A 90 mile strip near the Congolese border on the north of the country contains about 25 percent of the world's known copper reserves. Over and above copper, there are other mineral resources like cobalt, lead,

zinc, limestone, coal and amethyst.

On its farms Zambia produces maize, groundnuts, tobacco and cotton. Cattle, sheep, goats and pigs are also raised there. Forests supply enough wood to be used in the copper mines as "pit-props," to avoid the ceiling of the mine coming down on the workers. Wood is also used as fuel. Lakes provide fish for food.

Installed electrical power capacity in 1971 was 262,000 killowatts, with a production of 604 killowatt hours. Irving Kaplan and others in the "Area Handbook for Zambia" write:

> By 1972 the country's overall requirements for electrical power is expected to be between 400 and 500 megawatts. A recent study led to the conclusion that by 1975-80 even the Kafue output might prove insufficient to meet the country's needs, hence Kaunda's decision to go ahead with Kariba II in addition to the costly Kafue Gorge project (Kaplan, 1969, p. 337).

The Learning Resource Center if established, will involve the use of more electrical power and hence this will be a consideration while planning it. At the moment, the country seems to be self-sufficient in terms of electrical power, and the government is aware of its needs for more electrical power and is doing its best to achieve it.

Balance of payment position was strong at the end of 1969. For the first half of the year, exports had exceeded imports by $283 million, giving a potential trade surplus for the year of more than $560 million, which in 1968 was $323 million. Further, creation of iron and steel works near Lusaka, the capital, and the completion of the Kafue hydro-electric project will give a good boost to Zambia's economic strength.

The statistics cited above suggest a few things. First, they suggest that the country is financially strong and has become stronger than in previous years. Second, they suggest that the country can spend more

money on education. This is further substantiated by the fact that, "Expenditure on education rose from 6.3 million pounds ($16 million) in 1964 to 24 million pounds ($60.96 million) in 1968 (Rake, 1970, p. 427).

Third, the country has enough money in foreign currency, so if material and equipment have to be imported from a foreign country the currency will not pose a major problem because:

> For the first half of the year (1969) exports had exceeded imports by K195m, ($283 million) giving a potential trade surplus for the year of more than K400m) ($560 million), in 1968 it was K218m ($323 million) (Rake, 1970, p. 427).

The completion of the proposed Tanzam Railway by 1975 will allow Zambia, a land-locked country, to end its dependence on the south for all the transport of its necessities. Now, it will be able to bring in most of its imports from the Indian ocean region.

UNESCO's earlier projects suffered because equipment and books had to be air-freighted to the site because of transport difficulties.

> In addition to the physical difficulties of getting equipment and supplies to a land-locked country, severing its connections with the South, other difficulties were encountered . . . Because the nation had to establish priorities for its life, this meant that non-priority items often had to remain at the railhead (a distance of 400 miles away) for up to a year (UNESCO, 1970, p. 11).

The completion of the Tanzam railway will result in faster communications in the country.

The other mode of transportation is roads--total asphalt mileage of roads in the country was about 10,000 miles in 1968. In 1971, the total mileage of roads was 21,400 miles. This fact might help in providing easy transport for instructional material from one part of the country to the other. Also more teachers could more easily use the facilities of the Learning Resource Center.

Education in Zambia

Prior to suggesting changes and innovations in any educational system, it is advisable to look into its historical developments. That might give us a better insight into the developmental needs and problems of the country in the light of which the suggested new program might improve. Zambia has a long history, but we shall confine ourselves here to the educational aspect of the history, starting from the colonial period. This part of the history can be easily divided into three sections:

A. The Colonial Period, 1924-1953

B. The Federation Period, 1953-1964

C. The Period of Independence, 1964 -

A. The Colonial Period, 1924-1953

Two educational systems were created in 1925, one for European and Asian children and the other for the African children. They remained segregated until independence in 1964. Shortage of teachers and teacher training institutions seriously impaired the progress of African education.

Early Education

Missionaries who settled north of the Zambezi river during the latter part of the 19th century, introduced formal education. The main purpose of the mission schools was to spread christianity to the African population through education. Teachers and evangelists were sent to inner parts of the country where they were in charge of small schools. Lack of money, trained teachers and classroom space kept the extent and quality of the program at a low level, but these mission schools did remain meeting places for Africans, where they sang hymns and recited.

Very little was achieved in formal education before World War I.

There was an attempt to educate the children of white settlers, but there also, due to inadequacy in number of schools, little was done. As revealed by the 1911 census, out of 93 European children between the age of 5-14 only 45 could read or write.

In 1925, the Colonial Office took over from the British South Africa Company. The Northern Rhodesian Government then assumed formal responsibility for education in the territory. A Department of Education for Europeans was created and a subdepartment, known as the Department of Native Affairs under the Director of African education was formed to deal with the education of Africans.

System of Education in 1925

The system was patterned after the British model. Primary education was divided into three parts:

1. The lower primary school (Substandard A and B and standards-grades I & II)
2. The middle primary school (Standards (III & IV)
3. The upper primary school (Standards V & VI)

Primary school was followed by Junior Secondary school (Forms I & II). After successful completion of Junior Secondary school, students could enter Senior Secondary school for 2 1/2 years or go to centers specializing in Teacher Training, Domestic and Science teacher training, or Technical training.

Students who completed Senior Secondary school took the Cambridge Overseas Certificate examination or Senior Secondary Certificate examination. On passing any one of them, the student was qualified for a scholarship to study in Great Britain, Southern Rhodesia, South Africa or Uganda.

There were no secondary schools for Africans until 1940, and racial segregation was imposed in all schools in Northern Rhodesia. As a result, all African students who wished to continue their studies beyond standard VI had to enter Teacher Training or Trade schools.

The two systems remained separate, and schools were segregated until Zambian independence. They differed considerably in curricula, teacher qualification, and school facilities; the European system being far better and more professional than the African.

When the Department of Education was formed in Northern Rhodesia, education of European children was inferior to that in Southern Rhodesia. By 1927, however, efforts were made to raise the quality and enrollment in European schools, and the Government introduced a few secondary subjects in four schools. "Despite this, 400 out of 1000 white school age children were still not getting any formal education in 1928 (Kaplan, 1969, p. 163)."

Mining towns, which were attracting a large number of Africans, were seriously affected by the lack of school facilities. Mining companies were reluctant to take any responsibility for education of African children on the Copperbelt. "1933 census showed that, out of 3,760 children in three main urban centers on the Copperbelt, only 250 attended school daily (Kaplan, 1969, p. 163)."

The economic depression of the early 1930's, upset everything. With the increase of revenue in 1937, a five year program designed to increase school enrollment and teacher training was made possible after the depression. A severe shortage of trained teachers and lack of schools delayed the completior of the program until 1944, and then it provided facilities for only half the number of children thought to be of school age.

Teacher Training Centers in this period varied greatly in quality

and length of training offered. Teachers who completed two year courses and received a Government Certificate often preferred to work at Mission schools where teaching facilities were better and life less difficult. This movement left bush schools in the hands of teachers with very little formal training.

The British emphasized technical and trade training in the curricula of African schools to provide trained labor. A government school was created in 1943.

Education After World War II

Soon after World War II ended, a revision of the African school system in Zambia was undertaken. A ten year plan was designed and put into effect from 1947 to 1956, with the following primary objectives:

1. To improve and expand the lower and upper primary school system;
2. To develop a more adequate secondary education;
3. To introduce more professional technical education;
4. To increase the number of trained teachers;
5. To improve the so far neglected education of girls and women;
6. To complete four years of lower primary schooling for as many children as possible.

Education for African children living on the Copperbelt was made compulsory in 1948, but was suspended in 1951 due to lack of teachers and classrooms. Places in upper classes were very few, thus leaving many young Zambians with no more than a mediocre primary education to depend upon for employment.

B. The Federation Period, 1953-1964

The creation of Federation of Rhodesia and Nyasaland in 1953, brought about some changes in the educational system. In 1954, education in all the three territories was put under the Federal Ministry of Education, but African education remained a territorial responsibility until the passage of the Federal Education Act in 1957. By this act free education was provided in Government schools to all residents, and English became the official language of instruction.

New schools were being built, but the shortage of teachers, which had been a constant problem, hindered the expansion of African education.

In 1958, it was estimated that less than 26 percent of enrolled African pupils completed the full Primary course and that under 2 percent of the total number of pupils enrolled in African schools was being admitted to Secondary schools. Four more secondary schools were built in 1961, to add to the only one existing secondary school in the country so far.

In 1959, the four year Development Capital Plan was launched by the Federal Government to develop secondary education in Northern Rhodesia. In 1963, when the plan was completed, secondary school enrollment of Africans increased by 171 percent--from 2,599 to 7,090.

C. The Period of Independence, 1964 -

When Zambia became independent in 1964, it was considered to be the least educationally developed of all of Britain's former African Colonies. In 1964, there were no more than 100 Zambian university graduates and about 1,000 School Certificate holders (Form IV) and about 4,500 stu-

dents with Form II Certificates.

The Ministry of Education was created in 1964. In 1966, a new education act was put into effect. Under this act the Ministry of Education was given power to establish a new structure of educational authorities corresponding to administrative divisions; the Local Councils of Education, the Regional Councils of Education, and the National Council of Education. It was given responsibility for all schools and adult education in the country. The Mass Literacy program, however, was put under the Department of Community Development, and Youth Education, controlled by the Zambian Youth Service, was under the Ministry of Cooperatives, Youth and Social Development. The former federal schools (for Europeans, Asians and Eurafricans) were designated as "fee-paying schools" and African schools were known as "non-fee-paying schools." After independence under the Education Act of 1966, the Zambian Dual School System was amalgamated.

The achievement of greater parity between "fee-paying" and "non-fee-paying schools" was attempted by (1) reducing the non-fee-paying course from eight to seven years, (2) by instituting common syllabi and academic standards, and (3) by introducing English as the medium of instruction from the first school year in non-fee-paying schools. Previously four main vernaculars had been used as the languages of instruction in African primary schools.

Administrative Organization

Whenever one thinks about any educational innovation, it is always useful to know the administrative pattern. A good understanding of the structure many a time facilities the procedural difficulties.

The Minister of Education is assisted by the Permanent Secretaries, School Inspectors and a planning unit staff. The headquarters of the Ministry, headed by the Permanent Secretary for Education, are divided into three main sections working under the Professional Under Secretary, the Administrative Under Secretary and a Chief Inspector of schools. The Professional Under Secretary is responsible for legislation, relations with local authorities, voluntary agencies, and other educational organizations like the Teachers Association, publication, libraries, scholarships, examinations and all educational programs. The Administrative Under Secretary is directly responsible for finances, buildings, supplies, staff matters and recruitment. The Chief Inspector of schools is responsible for the efficiency of the shcools, revision of the syllabi and curriculum development. In each province a Chief Education Officer is responsible to the Permanent Secretary for general control, both administrative and financial, of all education in that area.

The country is divided into nine administrative units, and there is one Zambian Chief Education Officer in each one of them. Seventy-five percent of administrative and senior school personnel are Zambians.

The Ministry of Education is responsible for most Zambian schools and adult education, except the following:

1. Education of the handicapped, which is under the Ministry of Labor and Social Development;
2. Mass Literacy Programs, which are under the Department of Community Development;
3. Training of youth not in schools, which is controlled by the Ministry of Cooperatives, Youth and Social Development.

The salient features of educational development in the years 1968 and 1969 are:

1. The crash program of teacher training
2. The growing emphasis on commercial subjects
3. Agricultural science instruction
4. Expansion of the English medium scheme, and
5. Radio and television (UNESCO, 1970).

Types of Schools

Schools have been divided into three groups:

1. Government schools, which are financially maintained and administered by government through the Chief Education Officers;
2. Aided schools, which are financially maintained by the government but administered by 16 missionary societies authorized to manage schools;
3. Private schools, which are administered by private agencies, some of which charge tuition fees.

Growth in Education

Growth in education can best be appreciated by the increase in Primary and Secondary school enrollment since 1964:

	No. of children in 1964	No. of children in 1969
Primary education	365,567	598,198
Secondary education	15,374	41,371

Establishment of the University of Zambia in 1966 shows the government's awareness to the country's need for higher education. The goal of this university is to make the country self-sufficient and replace the predominently European teaching staff at various educational institutions as well as in commerce, government and industry.

The growth in number of students now going to schools does not give us any indication about the quality of education. The government has to rely on the expatriate teachers, a percentage of whom may not feel involved in the educational growth of the Zambian youth, as they come from altogether different cultures and backgrounds. The government is trying, through various techniques, to bring about quality education to more of its youth. UNESCO's project of teacher training and college instructor preparation, television and radio broadcast programs vitalizing education in the classroom, are but two illustrations at attempts to improve the quality of education.

As seen earlier, the number of students is steadily increasing. As a result, more teachers, more classrooms, more administrators, more instructional material, more research on the feasibility of the present curriculum, new trends in instructional techniques and production of instructional material to suit the specific needs of the new curriculum, etc., will be needed. A center established in the country that can take care of these growing needs might prove very useful.

The following are the areas that any design for improvement must address itself to:

1. Pre-service training of teachers
2. In-service training of teachers
3. Curriculum improvement
4. Distribution of instructional material
5. Production of instructional material
6. Adoption of instructional material
7. Adaptation of instructional material
8. Cooperation in TV and radio broadcasts, etc.

These are a few of the functions that a Learning Resource Center can perform to improve the quality of education.

As we have seen throughout the educational history of Zambia since 1925, the country has always faced an acute shortage of teachers. Sometimes worthwhile plans had to be suspended because of a dearth of teachers. The growth of education has always suffered because of this shortage of teachers. Even today the country faces the teacher shortage problem; and any attempt made to make the country self-sufficient must include teacher training as a top priority requirements.

The shortage of instructional materials also has hindered quality education in the country. Needs to update and Zambianize curriculum and to facilitate the spread of education to the remote countryside is another need, as can be seen from the history of education. Any effort made in this direction would be useful to the country.

Educational Structure

A look at the educational structure will give us specificity and direction. What types of programs are to be created for what stage, for what type of clientele, and to what extent? To get answers to such questions it would be worth our while to look at the educational organization of the country from primary education through higher education, including vocational education.

Primary Education (Elementary Education)

The seven year primary school consists of a four year lower level (grades 1 through 4), for children between the age of 7 and 11, and a three year upper level (grades 5 through 7), for children between the ages of 11 and 13. Study in primary school leads to the Primary School Leaving

Certificate examination. In the late 1960's more than 600,000 pupils were enrolled annually in primary schools.

By 1970, the government had decided to provide a place in grade 1 for every eligible child. This objective was met in 1968, two years ahead of schedule.

Secondary Education

The Zambian secondary school is divided into junior and senior levels. The junior level consists of a two year general secondary course (Forms I and II, for students aged 14 to 16) leading to Junior Secondary School Leaving Certificate examination and a three year trade training course (Forms I through III) leading to the Trade Test Certificate examination.

The senior secondary level consists of three courses: a three year general secondary course (Form III through V for students between the ages of 16 and 18) leading to the Cambridge Overseas School Leaving Certificate examination; a two year teacher training course (Forms III and IV for students aged 16 and 17) leading to the Teacher's Certificate examination for primary grades; and a three year technical secondary course (Forms III through V for students between the ages of 16 and 18) leading to the Cambridge Overseas School Leaving Certificate examination. In the late 1960's more than 40,000 students were enrolled annually in the secondary school programs.

> At the time of Independence there were but three schools leading to university entrance, and a further twenty that did not lead to a full secondary education. Since then expansion has been rapid and massive, and there are now (1970) 118 secondary schools that lead or will lead to university entrance. More secondary schools are to be constructed with the help of the IBRD. The need for a continuation of assistance to teacher training, and indeed its expansion, would appear vital (UNESCO, 1970, p. 7).

By 1969, 64 of the 111 secondary schools offered commercial subjects up to GCE "O" level. Agricultural science instruction is being associated in the primary and the secondary schools curricula as a result of the President's "Back to the Land" plea. In 1970, 3 percent, 1400 secondary school pupils, offered that subject. At the primary level the main feature in 1970 was the short course to acquaint teachers with agricultural science. Next year 253 primary schools (10%) will teach this subject (UNESCO, 1970).

Post Secondary and Higher Education

Post Secondary Education includes a three year teacher training course leading to the Teacher's Certificate for secondary schools and a three year technical course leading to the Technical Certificate. Adult Education is provided for more than 28,000 Zambians annually.

Admission to the University of Zambia, opened in March, 1966, in English and four other subjects, is made on the basis of the student's performance on the Cambridge Overseas Learning Certificate examination ordinary level.

There are three year courses at the university in humanities, social sciences, and natural sciences leading to the B.A. degree. A diploma in social work is offered, and a one year post-graduate certificate of education course is also provided. The university also includes a five year school of engineering and a seven year school of medicine.

In 1965, Zambia had fewer than 100 college graduates and fewer than 1,000 Cambridge school certificate graduates. The school certificate graduates are similar to the American high school graduates. In 1965, only 8,000 Africans were enrolled in secondary schools.

Beginning in 1965, first year secondary school students did not pay school fees. These fees were formerly beyond the economic reach of most African parents.

In 1967, according to P.G. Delahunty, Senior Education Officer, Ministry of Education, 100,000 pupils listened to radio educational lessons.

Teacher Training

The Ministry of Education made great efforts to increase the number of Teacher Training Centers and enrollment of students in them. It was successful in getting enough teachers for primary schools; but, in 1968, the country still needed more secondary school teachers. This shortage necessitated recruitment of qualified teachers from abroad. It was estimated in 1968 that the teaching staff at secondary schools was 80 to 90 percent foreign, mostly from Great Britain. Secondary teacher training institutions undertook crash programs and reduced the duration of the teacher training course.

During the crash program of teacher training, 1966 to 1968, primary school teachers were trained for one year instead of the usual two, in order to double the output of teachers and meet the heavy rate of increase in primary enrollment.

Technical, Vocational and Commercial Education

Technical training has been given importance by the government in planning for development. Since 1965, technical training has been revised and accelerated. Additional technical schools have been opened to meet the increased demand of trained workers in industry, mining, commerce and government. Students are prepared for government trades tests or for craft level examinations of the City and Guild of London. Trade school enrollment has increased considerably since 1965. Technical and professional training at senior level is given at more advanced technical colleges in Zambia.

Agriculture

President Kenneth Kaunda has stressed the need for the development of the country's agriculture. Advanced schools of agriculture have been established. Courses are offered to students who have had two years of secondary school as well as to those who had primary school education. A farm institute, one in each province, conducts short term courses in agriculture.

Correspondence Course

In 1964, the Government initiated the Correspondence Course Unit, becoming the first African government in East and Central Africa to take full responsibility for such a program. Formerly, correspondence courses existed for the benefit of children of white settlers. Eventually, University of Zambia's Department of Education was planning to take over the correspondence program in 1968.

It might, therefore, be worthwhile if the plan and program of the Learning Resource Center could encompass teachers and students at the primary education level, secondary education level and higher education level, as well as in vocational education, such as teacher training, technical, commercial, agriculture education and correspondence courses.

Educational Services

Library service in Zambia has been expanded considerably since 1966, chiefly in rural areas where books are less readily available to the population. New libraries were built with plans for extended library service to cover large areas of the country. In the mid-1960's, government plans were to eventually provide branch libraries in centers with a popu-

lation exceeding 200 persons. Training for librarians is given at several educational institutions to fill the increasing need for qualified personnel.

The use of radio and television for educational purposes has acquired a great deal of support in Zambia. Television was first introduced in the Copperbelt in 1961 under the Federation. A year later the first educational programs were presented, but these were limited to the white population.

In 1965, a pilot educational television project was introduced. Since that time, educational television service has been extended. Educational radio and television broadcasting are provided largely for the top three primary grades and the first three secondary forms. Radio broadcasts are used by all the classes for which they are intended, but television is limited to those classes to which the 150 television sets have been supplied.

Courses presented daily on the educational television network include history, geography, mathematics and French. These courses are not intended to replace the school curriculum, but to supplement it. The programs are designed for students in upper primary school, secondary school and at the university level.

Radio broadcasts have been more effective in transmitting educational programs throughout the country, as radios are more easily accessible to the African population. Over and above the school population, these programs are used in teacher training and adult education as well. The audio-visual aids library stocks filmstrips, records, tapes, wall charts and art reproductions. A number of films are provided by the United Nations Development Program (UNDP) as well as United Nations Educational,

Scientific and Cultural Organization (UNESCO). The Ministry of Education's aim is to provide all Zambian schools with audio-visual facilities in order to improve teaching methods at all levels of education. The English Medium Center, established in 1966, has been preparing teaching materials and developing methods to help the transition to English as the medium of instruction.

Trends and Problems

A U.N. economic survey report, published in 1964, indicates that in terms of high-level manpower, Zambia is one of the least educated countries in Africa. According to the report, of those Zambians over 21, half of the men and over four fifths of the women have never been to school.

According to the 1963 census, 75 percent of males and 93 percent of females over the age of 16 have had less than four years of primary education. Fewer than 14,000 Zambian Africans have received any secondary education. Of the 256,000 African males in wage earning employment in Zambia at the time of government's 1963 census, fewer than 10,000 had been to secondary school; most of the labor force had a maximum of four years of schooling and more than one third had not gone to school and were illiterate.

Many African leaders in Zambia attribute their country's educational shortcomings to economic discrimination during the ten year Federation period, charging that the bulk of income from Zambia's copper resources was drained off to benefit Southern Rhodesia's industries instead of going toward Zambian educational development.

To meet trained manpower needs, Zambia aimed at its 1966-70 National Development Plan:

1. To provide every seven year old child with a place in primary school
2. To allow all youths in urban areas to complete the full seven year primary course, and
3. To allow 75 percent of those in rural areas to complete the full seven year primary course (The Encyclopedia of Education, 1971).

At the secondary level the aim was for two-thirds of the junior secondary school students to proceed to the senior secondary school, leaving one-third to enter technical schools or employment. The aim was further to direct as many graduates as possible after Form V to teacher training colleges and to the University of Zambia. To meet the anticipated educational expansion, the recurrent expenditure on education rose from $15.12 million in 1964 to $57.6 million in 1968.

The country, then, has already established some goals and thereby shown interest and preparedness to do its best for educating the younger generation. The odds are great, however, and it is here that if something is done to create a local teaching cadre one of the problems of the country can be greatly minimized. A properly planned and developed Learning Resource Center has a potential to help hasten this process of getting better trained teachers faster.

Education in Zambia Today and Tomorrow

One of the most important responsibilities of the Government of Zambia is the need to strengthen the nation's educational system and Zambianize it. In the primary teaching force there are about 98 percent Zambians, yet emphasis has to be laid on training and re-training of teachers, head masters, inspectors of schools, education officers, training college lecturers and subject specialists.

According to the latest available information (April, 1971) at the

> Ministry of Education, 88 percent of the secondary school teaching force was expatriate on 1 January 1971. Since Zambia achieved independence the teaching force at the secondary level has paradoxically become less Zambian because of the demands made on its personnel by Government departments and the mining industry (UNESCO, 1971, p. 10).

This problem of non-Zambian teachers is becoming more acute due to the fact that education is spreading rapidly and more and more schools are coming into being. At the time of independence there were only three secondary schools with programs leading to university entrance. There are now about 125 schools and more secondary schools planned to be constructed with the assistance of the International Bank for Reconstruction and Development (IBRD). Need for more teachers and teacher trainers is evident.

To better appreciate education in Zambia today and tomorrow, a look at the present and projected enrollment at various levels of education in Zambia and its corresponding need for teachers and administrators will be necessary. Tables that follow were prepared by the Office of the President, Development Division and the Planning Unit, Ministry of Education, Government of Zambia. These tables vividly show the educational growth of the country through the year 1978.

At the primary level, as seen in Table 1 prepared by the Office of the President, Development Division, in 1969, the total enrollment of pupils is estimated to rise in the decade 1969-1978, from 659,000 to 1,026,000. In 1969, there were 13,569 Primary teachers in service and Table 1 shows the number of additional teachers required.

With requirement of more teachers, is associated the requirement of preparing primary teacher trainers, primary inspectors (supervisors), and education officers. Table 2 categorizes needs from 1970 through 1978.

TABLE 1

Primary School Development, 1969-79 (All Schools)

-------Enrollment Patterns in Thousands-------

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Total Enrollment	Additional Teachers Required
1969	127	122	114	100	73	63	60	659	1,030
1970	131	126	121	113	81	72	62	706	1,017
1971	135	130	125	120	89	80	71	750	1,013
1972	138	134	129	124	97	88	79	789	913
1973	141	137	133	128	105	96	87	827	895
1974	143	139	136	132	113	104	95	862	840
1975	146	141	138	135	121	112	103	896	822
1976	149	144	141	138	129	120	111	932	858
1977	152	147	144	140	137	128	119	967	840
1978	155	150	146	143	140	137	127	998	734
1979	161	153	149	146	144	139	134	1,026	620

Source: Office of the President, Development Division, 1969.

Notes:

1. Enrollment Patterns: These are made up of projections of existing enrollments and, for later years, population figures are taken from Annexure XXXII in the F.N.D.P.

2. Additional teachers required. Teacher:pupil ratios for the lower and upper primary sectors have been derived from 1968 Primary Enrollment figures and assumed to remain constant throughout.

3. In 1969, there were 13,569 primary teachers in service.

Table 2

Estimated Requirements of Primary Teacher Trainers, Primary Inspectors and Education Officers, 1970-78

	1970	1971	1972	1973	1974	1975	1976	1977	1978
1. Enrollments in pre-service colleges	1950	2000	2875	2875	2875	2875	2875	2875	2875
2. Tutors required in pre-service colleges at 15:1	137	140	198	198	198	198	198	198	198
3. Principals required in pre-service colleges	8	8	10	10	10	10	10	10	10
4. Enrollment in in-service college (students per year)	100	100	300	300	300	300	300	300	300
5. Tutors required in in-service college at 12:1	8	8	25	25	25	25	25	25	25
6. Principal, in-service college	1	1	1	1	1	1	1	1	1
7. Primary inspectors - Ministry Headquarters	6	6	6	6	6	6	6	6	6
8. Primary inspectors - regional	62	80	98	116	134	142	148	154	160
9. Education officers - Ministry Headquarters	6	6	8	8	10	10			
10. Education officers - regional	36	46	56	66	76	86			
11. Chief Education Officers	9	9	9	9	9	9			
12. Deputy Chief Education Officers	9	9	9	9	9	9			

Notes:

1. Line 1: It is assumed that no increase in pre-service teacher training facilities will be made above that included in the Government-financed and World Bank-assisted construction plans of 1970. (The decline in enrollments in 1970 and 1971 is due to the conversion of a pre-service college into a National In-Service Training College.)
2. Line 4: The National In-Service Training College (Chalimbana) offers courses of one term's duration. The total of students passing through the College in any year will therefore be three times the figure shown in line 4.
3. Line 7: No increase is envisaged in the primary inspectorate at Ministry of Education Headquarters as some duties currently performed by inspectors will be handed over to the Curriculum Development Centre to be established in 1970.
4. Line 8: The target ratio of regional primary inspectors to primary teachers is 1:130. At the rate of growth indicated in line 8, this would be achieved in 1974.
5. Lines 9-12: Indicated growth rates are derived from information supplied by the Ministry of Education, April, 1970. No projections beyond 1975 are available.

Table 3 shows primary teacher training staff, by their terms of service, in the year 1969. The most interesting and important fact for us is the note at the bottom of the table, which reads, "None of the 72 Zambian lecturers were graduates." Thus, these pieces of information lead us to the urgency of need for preparing not only teachers, but also trainers of teachers.

If properly developed and planned, a Learning Resource Center can help achieve this to a considerable extent. Data related to the Secondary level are presented below.

As seen in Table 4, prepared by the Planning Unit, Ministry of Education, Government of Zambia, in July, 1969, Secondary school pupil enrollments are estimated to rise in the decade 1969 to 1978, from 47,000 to 86,000. This fact can be very easily appreciated in Figure 1, below.

This rise in the number of Secondary school pupils entails a rise in secondary school teacher requirements over the same period (1969-1978) from 2,124 to 3,831; with an average pupil-teacher ratio of 22.5:1. Table 5 shows a breakdown of needs of teachers year by year with respect to enrollment in that particular year.

In contrast to the need, it will be worthwhile to have a look at the proportion of Zambian and non-Zambian teachers in 1969. Table 6 brings this out very vividly in all the three types of schools in Zambia. Needless to say, an overwhelming majority of the teachers are non-Zambians.

We have now seen the extent of need for teachers for the growing pupil enrollment. With the country's existing teacher preparation facilities, the total number of trained Zambian teachers, annually entering the teaching force will rise from 67 in 1969 to 580 in 1978. This fact has been shown very clearly, institutionwise, in Table 7.

TABLE 3

Primary Teacher Training Staff by Terms of Service, 1969

	CONTRACT					VOLUNTEER				
	Zambian	Grant-aided and Religious	OSAS/ BACS	Danish	TEEA	CUSO	VSO	Danish	Locally Recruited Non-Zambian	Total
Principals	4	3	2	0	0	0		0	0	9
Vice-Principals	8	1	0	0	0	0		0	0	9
Lecturers	72	33	18	2	2	4		1	3	136
Totals	84	37	20	2	2	4		1	3	154

Source: Inspectorate, Ministry of Education, February, 1970.

Note: None of the 72 Zambian lecturers was a graduate.

Table 4

Estimated Secondary School Enrollments, 1969-78, by Form and Sex (All Schools).

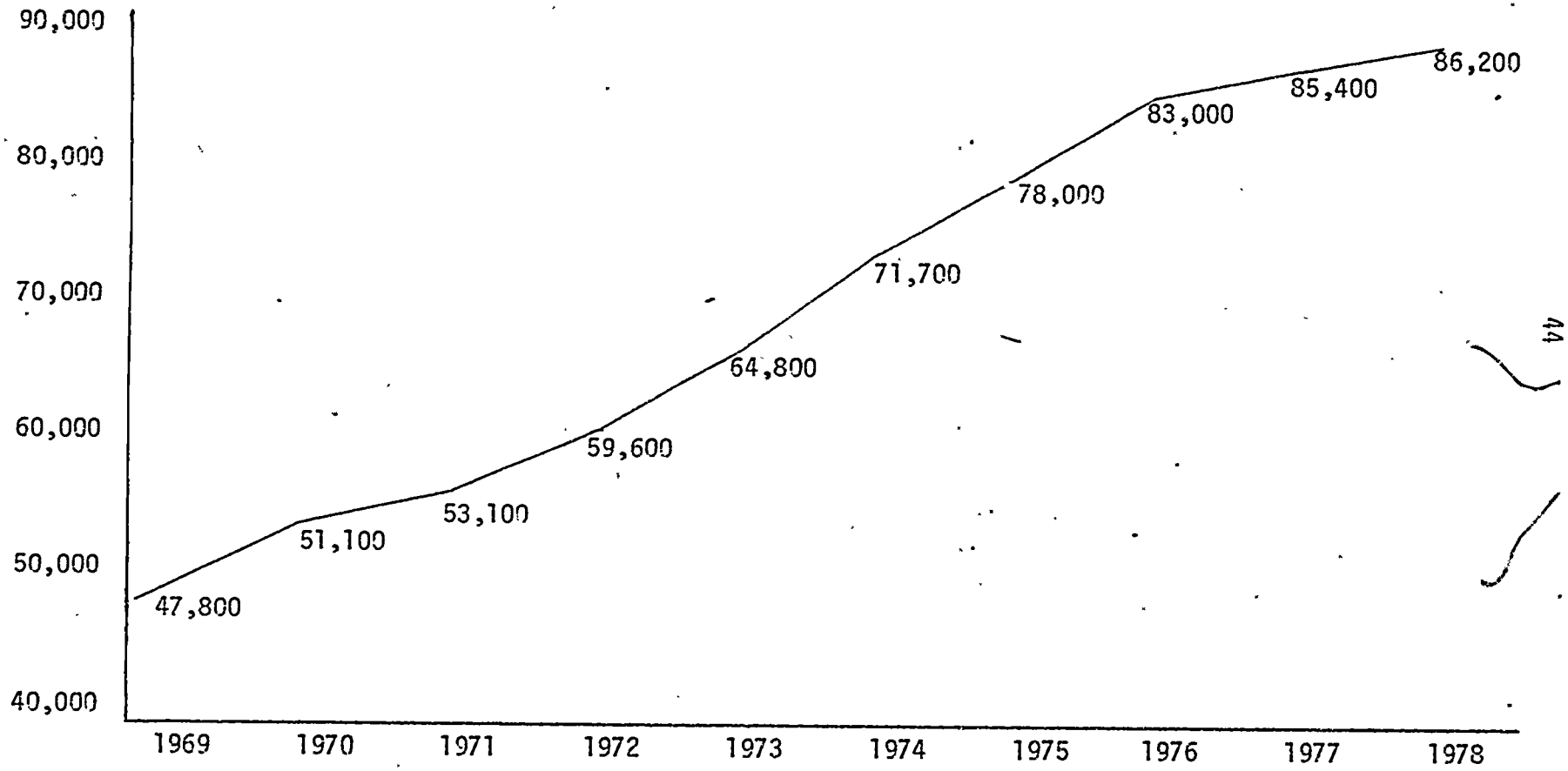
	BOYS						GIRLS						
	Form I	Form II	Form III	Form IV	Form V	Total Boys	Form I	Form II	Form III	Form IV	Form V	Total Girls	Total Pupils
1969	9,600	9,500	6,000	4,600	2,500	32,200	6,100	5,100	2,300	1,400	700	15,600	47,800
1970	7,600	9,700	6,300	5,500	4,300	33,400	5,700	5,900	2,700	2,000	1,400	17,700	51,100
1971	8,900	7,400	6,500	5,700	5,200	33,700	5,600	5,600	4,000	2,300	1,900	19,400	53,100
1972	10,400	8,900	7,200	4,700	5,500	36,700	7,000	5,500	5,400	2,800	2,200	22,900	59,600
1973	12,400	10,300	8,600	3,800	4,700	39,800	7,300	6,900	5,300	2,800	2,700	25,000	64,800
1974	13,500	12,400	10,200	4,500	3,800	44,400	8,000	7,200	6,700	2,700	2,700	27,300	71,700
1975	13,600	13,500	12,200	5,200	4,500	49,000	8,100	7,900	7,000	3,300	2,700	29,000	78,000
1976	13,600	13,600	13,500	6,300	5,200	52,200	8,200	8,100	7,800	3,500	3,200	30,800	83,000
1977	13,600	13,600	13,600	6,800	6,300	53,900	8,200	8,100	7,900	3,800	3,500	31,500	85,400
1978	13,600	13,600	13,600	6,800	6,800	54,400	8,200	8,100	7,900	3,800	3,800	31,800	86,200

Source: Planning Unit, Ministry of Education, July, 1969

Notes:
1. These estimates include 1,700 pupils in private secondary schools in each year.
2. The expansion of places in government secondary schools is based upon planned Government-financed and World Bank-assisted building programmes.
3. The outputs at Forms III and V are closely in line with estimated manpower requirements (see Development Division, Office of the President, Zambian Manpower (Lusaka: Government Printer, 1969, pp. 42-43).

Figure 1

Estimated Secondary School Enrollments, 1968-78 (All Schools)



Source: See Table 4.

Table 5

Estimated Secondary Teacher Requirements (All Schools), 1969-78

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Enrollments	47,800	51,100	53,100	59,600	64,800	71,700	78,000	83,000	85,400	86,200
Teachers	2,124	2,271	2,360	2,649	2,880	3,187	3,467	3,689	3,796	3,831

Notes:

1. These estimates are derived from enrollment figures in Table 1, applying a pupil:teacher ratio of 22.5:1.

2. Headmasters, deputy heads, and boarding masters are included.

Table 6

Proportions of Zambian and Non-Zambian Teachers - 1969

	Total Teachers	Percent Zambian	Percent Non-Zambian
Government Schools	1,444	8.9	91.1
Aided Schools	495	8.5	91.5
Private Schools	132	17.4	82.6
All Schools	2,071	9.3	90.7

Source: Derived from figures supplied by Planning Unit, Ministry of Education, 1969.

Table 7

Estimated Annual Inputs of Zambian Secondary Teachers From Existing Training Programmes, 1970-78

1. Year of Qualification (Dec.)	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
2. Year of input (Jan.)	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
3. Kabwe Teachers' College	47*	68	41	51	197	197	0	133	133	133
4. Copperbelt Teachers' College	0	0	0	0	133	133	0	89	89	89
5. Natural Resources Dev. College	0	0	0	9	18	18	18	18	18	18
6. Total diploma level	47*	68	41	60	348	348	18	240	240	240
7. University of Zambia (graduates)	0	9	19	52	75	101	170	240	280	340
8. Total Zambian teachers entering teaching force	47*	77	60	112	423	449	188	480	520	580

* Qualified March, 1969, entered teaching force April, 1969.

Notes:

1. Lines 3 and 4: It is assumed that (a) a second teacher's college (the Copperbelt College), will open, as planned, in 1971; (b) that two-year courses will operate at the Kabwe and Copperbelt colleges until 1972; (c) that beginning with the 1973 first-year intake, the Kabwe and Copperbelt colleges will adapt three-year courses; (d) that two-year trained teachers will teach only in junior secondary classes (Forms I-III) and three-year trained teachers throughout the secondary schools.
2. Line 5: It is assumed that the three-year course at NRDC (training agricultural science teachers for junior and senior secondary classes) will be retained.
3. An assumed drop-out rate of 10% has been applied to all diploma-level courses.
4. It is assumed that in all diploma-level courses, 80% of candidates will pass, 15% will be referred and 5% will fail. It is further assumed that referred candidates will enter the teaching force in the year following their examination, but on subsequent failure will leave the profession. (This is accounted for in the attrition rate of 10% adopted in Table 8, line 2.)
5. It is assumed that all teacher training programmes will be able to attract enough students to fill all vacancies in the first year of study.
6. Line 8: Qualifying 1970-74: University of Zambia, School of Education, Report of the Committee on Post-Cambridge School Certificate Studies and University Entrance, September, 1969, page XXIV. Inputs for 1976-8 have been achieved by applying similar recruitment, quota and pass rates to subsequent estimated first-year undergraduate enrollments.

As a result of this increase in the training of Zambian teachers during the decade (1969-1978), there is expected to be a rise in the total Zambian Secondary teaching force from 170 in 1969 to 2,306 in 1978. Table 8 shows these details.

These figures have been taken from a report on "Training of Secondary School Teachers at the University of Zambia" prepared by UNESCO in October, 1971.

The figures are based on a very optimistic assumption that ALL successful students in the teacher training institutions will enter the teaching force in the year following their graduation and remain in the profession.

At the higher education stage, most of the teaching staff is expatriate. The University of Zambia is presently almost totally dependent on expatriate staff and teachers' colleges of Zambia are in almost the same predicament. As Irving Kaplan writes in his book, "Area Handbook for Zambia", "The faculty in 1968 was composed of Europeans, with the exception of the Dean of the Law School, a Ghanaian (Kaplan, 1969, p. 174)."

The University of Zambia and other educational institutions are working hard at the problem cited above. There are three means by which this problem may be approached: (1) the education and training of teachers, especially for secondary schools and teacher training colleges, (2) close cooperation with lower level educational institutions and with the Ministry of Education, and (3) research. The School of Education of the University of Zambia is attempting to do this through:

1. The Department of Education
2. The Science Education Center, and
3. The Institute of Education.

Table 8

Estimated Annual Stock of Zambian Secondary Teachers, 1969-78

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
1. Stock from previous year:		170	230	267	352	740	1115	1992	1553	1918
2. Less attrition in year @ 10%		17	23	27	35	74	111	119	155	192
3. Stock at 1 January (1-2)		153	207	240	317	666	1004	1073	1398	1726
4. Input from Training Programme		77	60	112	423	449	188	480	520	580
5. Total Zambian Teachers (3+4)	170	230	267	352	740	1115	1192	1553	1948	2306

Sources: Line 5, 1969: Information supplied by Ministry of Education.

Line 4 : Table 7, line 8.

Note: It is assumed that all successful students in teacher training courses will enter the teaching force in the year following qualification.

The country, then, is facing problems in educating its younger generation and its teachers. As seen earlier, the country has resources and is attempting to achieve the set goals with firm determination. In this sense the time is ripe for an educational innovation to boost efforts to bring about a positive thrust in solving the problem. In developed countries, Learning Resource Centers have made some positive contribution in the pre-service and in-service training of teachers as well as in the student learning process. The problem in Zambia being similar, a Learning Resource Center might spearhead the attack on the above mentioned problems.

Foreign Aid

As seen earlier, the Republic of Zambia came into being October 24, 1964. Before that, it was a British Protectorate. British connection with Zambia is over a hundred years old. David Livingstone made a journey to the upper Zambezi river in 1851. At the end of the 19th century (1889), Cecil Rhodes laid the foundation for administration in the country through his British South Africa Company. Christian missionaries began their work through education and medical assistance. The discovery of copper and other minerals brought about a rapid expansion of the Zambian economy.

Formidable tasks in the social, educational and economic fields remained to face the government and people of the new republic. While trying to overcome the above mentioned problems, Dr. Kenneth Kaunda, President of the Republic, said at the Independence Conference, "Here we could seek advice and assistance from our friends in other countries, and especially from Great Britain with the hope, the present ties of friendship will grow stronger as time goes on, and indeed from other Commonwealth countries."

Britain has been associated with the aid to Zambia from the inception of the Republic. Other countries that have helped Zambia develop in various fields, particularly in education, are the U.S.A. and other countries of the world through the United Nations Development Program (UNDP), and the United Nations Educational, Scientific and Cultural Organization (UNESCO).

The various aid programs: British, American and those by the United Nations through UNESCO, are reported below:

British Aid

British financial aid during 1945-1963 (i.e., before Zambian independence), totalled 7.8 million pounds. During the 1961-1965 plan, 5 million pounds were allocated to African education and staff training in Zambia. At the beginning of March, 1964, it was announced that the Final Stage of the 1961-1965 plan had been revised with the assistance of United Nations advisers and the expenditure on education and health services, etc., was being increased (Great Britain Central Office of Information, 1964).

American Aid

During the 1960's, many countries in Africa became independent. African countries have demonstrated a willingness to make sacrifices and face the difficult policy decisions required for economic and social growth. In the past decade, they have gained experience in mobilizing their own resources and setting their own development priorities; so in the 1970's the aid programs will have to respond increasingly to those needs and priorities identified by the African people.

> Although only about one-third of the young people of primary school age are in school, there are insufficient places in secondary schools for primary school graduates, and many of those who attend

> secondary school often find, they have not acquired skills needed to fill productive jobs and earn a living (U.S.A.I.D., 1972).

During the 1960's many educational, agricultural, research and service institutions were established and/or expanded. In the 1970's Africans must be trained to staff the institutions and their curricula must be Africanized. More effective methods are needed to train a large number of African technicians, administrators, teachers and managers so that there is less dependence on foreigners.

A large proportion of the United States program of African aid was in the field of agriculture and livestock production.

> The second thrust of the program will be in education where our main goals are (1) help developed institutions to train technicians, managers and administrators in selected skills and (2) help provide special education in manual and craft skills . (U.S.A.I.D., 1972).

Needs of African countries are similar. Zambia, as seen earlier, also faces the same problems. It has not been possible to get exact data regarding the U.S. aid to various educational projects in Zambia, but the following statistical information tells some of the story:

> In the fiscal year 1954, aid to Africa totalled $29,000,000. In fiscal year 1959, aid to Africa was $185,000,000; including a small amount of PL-480 foodstuff and Export-Import Bank Loan. In the fiscal year 1963, it exceeded $505,000,000 ($254,000,000 through aid, $321,000,000 in PL-480 commodities; $19,000,000 in Export-Import Bank Loans (U.S.A.I.D., 1964, pp. 8-12).

During the years 1962-1964, Zambia was not independent, but the aid given by the United States to the Federation of Northern and Southern Rhodesias and Nyasaland was as follows:

Fiscal Year 1962	$2.8 million out of $398.6 total aid to Africa
Fiscal Year 1963	$1.8 million out of $490.5 total aid to Africa
Fiscal Year 1964	$1.9 million out of $345.7 total aid to Africa

In the fiscal year 1971, Zambia received "self-help" funds only, which are used to augment local resources for small, worthwhile projects by private or local organizations, to the tune of $25,000 - $100,000 (U.S.A.I.D., 1971).

During the last decade, U.S. aid has supported the expansion of secondary school systems and the establishment of expansion of faculties of eight higher education and 26 subprofessional institutions, including teacher training institutions throughout the continent

> Over 15,000 new classrooms now house 80,000 students and institutions of higher and professional education in the important fields of agriculture, education and veterinary medicine have granted degrees to over 3,000 and diplomas of certificates to another 14,000. Demonstration schools of the comprehensive high school type were founded in Uganda and Nigeria, and a consolidated school system was created in Monrovia and Liberia. Under the Technical Assistance program, for Education and Manpower training in Africa, the following sums were set aside:
>
> | | | |
> |---|---|---|
> | Fiscal Year 1970 | $19.5 million | (actual) |
> | Fiscal Year 1971 | $17.8 million | (estimated) |
> | Fiscal Year 1972 | $15.6 million | (proposed) |
>
> (U.S.A.I.D., 1972)

In some African countries, inadequate transport and communications infrastructures preclude the expansion of trade, commerce and spread of education.

> In fiscal year 1972, a transportation loan of $6 million is planned to assist with the construction of a major road link between Botswana and Zambia. This road will open Zambian markets for Botswana livestock and other products, thus expanding trade between the two countries as well as strengthening the communication links among the Black-ruled states of the Zambezi river (U.S.A.I.D., 1972).

These communication links, primarily developed for commerce, can be great helps in giving greater mobility in meeting the educational needs of the country.

UNESCO's Contribution Toward Education in Africa

The United Nation's contribution toward the educational development of a developing country has been through its special organization, the United

Nations Educational, Scientific and Cultural Organization (UNESCO).

Before 1960, UNESCO had only eight member states in Africa. In 1969 there were 39. The main effort of these African countries is to catch up with developed countries within the space of one or two generations and education is one of their prime concerns.

Since 1960, education has received the lion's share of UNESCO assistance and expert advice, though more recently considerable and growing assistance has also been given to the development of science and technology. This can be seen from the amounts that UNESCO has been spending on education in Africa.

1961-62	$9.0 million
1963-64	$16.2 million
1965-66	$23.0 million
1967-68	$29.0 million
1969-70	$29.7 million (UNESCO, 1969, p. 1)

In 1969, UNESCO, in collaboration with a few of the emergent new states, conducted a survey of educational needs. The organization's general conference that year adopted a program of emergency aid to Africa and decided to convene a conference of African States to discuss the development of education and to draw up plans of action based on identified needs.

This conference, organized jointly by UNESCO and the UN Economic Commision for Africa, met at Addis Ababa, Ethiopia, in May, 1961. Representatives of 34 African states approved a series of short and long term activities grouped under what is known as the Addis Ababa plan. The chief goals to be achieved by 1980 were:

1. Universal primary education in all African countries
2. 20 percent of primary school pupils to be enrolled in secondary schools

3. The number of university students to be increased to about 300,000, (compared to 25,000 in 1961).

Expenditure on education will rise from $450 million in 1960 to $2,200 million in 1980. The African states anticipated that progress in education and other effort would so far improve their economies that, after 1980, they would be in a position progressively to assume financial responsibilities for their education system.

Following the Addis Ababa meeting, UNESCO convened further meetings of African Ministers of Education in Paris in 1962 and in Abidjan, Ivory Coast, in 1968 for Ministers for Economic Planning.

A major problem besetting African countries, which came out strongly at the Addis Ababa meeting, was the shortage of qualified teachers. Due to the UNESCO activities in teacher training the qualifications of primary teachers improved considerably in the following five years.

Another priority field of UNESCO assistance has been teacher training, particularly for secondary education, where African states still have to rely a good deal on foreign staff. Since 1969, 21 higher and secondary teacher training colleges have been established with aid from the U.N. Special Fund--now integrated into the U.N. Development Program (UNDP) and administered by UNESCO. These colleges are expected to turn out nearly 2000 fully qualified graduate teachers every year.

In Africa recently, as in other developing regions, there has been a growing awareness that, in addition to conventional secondary education, more agricultural, vocational and technical training is needed to help the country's economic and social growth. UNESCO has helped a number of nations requesting such aid through expert advice, educational planners seminars, regional meetings and workshops in the development of rural education and

in seeking to make agricultural life in country communities more attractive and profitable.

In the past few years, African states have followed another world-wide tendency to give increased importance to science education, particularly at secondary, higher and teacher training levels. At the UNESCO conference on higher education in Africa at Tananarive in 1962, it was decided that, if possible, 60 percent of students receiving higher education should be engaged in scientific and technical studies.

Museums and Libraries

The regional exchange of information on museums and the development of educational activities of museums in Africa are other fields where UNESCO has been at work. In 1964, it helped establish a regional center at Jos, Nigeria, for the training of African museum technicians.

Other training programs have been the establishment of an East African Training Center for librarians at Makerere College, Kampala, Uganda, and similar courses for librarians in French speaking countries at Dakar. Projects have been set up in Nigeria, Ivory Coast and Congo.

Communication

Africa is poorly served so far as mass communication media are concerned. In Africa one copy of a newspaper is read per 100 people. Africa has an average of two radio sets per 100 persons. About 19 countries are making a small beginning in television. There are now about two TV sets per 1000 inhabitants in Africa.

Training of Technicians

The introduction and the role of television in Africa were the themes of another UNESCO meeting in Lagos, Nigeria, in 1964. A pilot project for the use of audio-visual media followed; and television was launched in Dakar. In the meantime, UNESCO experts have assisted several African radio and TV stations in the organization of educational broadcasting services; among them are Gabon, Ghana, Mali, Senegal; Sierra Leone and Uganda.

UNESCO recently advised on the organization and establishment of an audio-visual production center which is being established in Dar-es-salam for Tanzania.

Regional Centers

UNESCO created the first African Regional Center for Studies in Mass Communication Science and Techniques at the University of Dakar.

There is presently a book "famine" in Africa, where only six titles are published per year per one million Africans. UNESCO organized training courses for helping in the creative and editorial side as well as in actual book production, including graphic arts.

UNESCO aided in the creation of a Regional School Building Center for Africa in Khartoum, Sudan, to help build new schools to accommodate the thousands of new pupils being enrolled.

A Center for the Production of Textbooks and Teaching Aids, at Yaounde, Cameroon, was started to help in the production of African Textbooks and teaching aids suitable for African schools.

A Regional Center for Educational Information and Research in Africa at Accra, Ghana, has been temporarily closed pending plans for reorganization.

UNESCO's Contribution in Zambian Education

A Secondary School Teacher Training Project at the University College, Salisbury, Regional Africa (REG 66), planned to augment the supply of secondary school teachers and focussing more on the training of teachers who already had their degree, was made operational in the then Federation of Rhodesia and Nyasaland in 1963. An arrangement with the Government of the then Northern Rhodesia continued the training of secondary school teachers at the University College in Salisbury. In November, 1965, the Government of Rhodesia unilaterally declared its independence so the United Nations decided to withdraw all UN persons from Rhodesia.

Because Zambia was formerly Northern Rhodesia, thus the lineal, legal descendant, the project was tranferred to the newly established University of Zambia, at the invitation of Zambian Government. In 1968, the Government of the Republic of Zambia requested and obtained a two year extension of this project. The aim of this project was to expand the existing facilities for secondary school teacher training available at the University College of Rhodesia and Nyasaland, Salisbury, Southern Rhodesia.

It was predicted in the Plan of Operation that the student population would rise from 205 in 1964 to 300 in 1968. This target was achieved in the two years of its life in Rhodesia. With a fresh beginning in Zambia, the target became different, however.

Another project, Training of Secondary School Teachers at the University of Zambia (ZAM 4), was scheduled to commence in March, 1967, but because of the small number of students electing education, it seemed more appropriate to start the project in 1968. To attract more students to the teacher training program, the government reserved 50 percent of the bursaries

for potential teachers. As a result of that, the enrollment rose from 14 in 1967 to 134 in 1968. Numbers have risen each year since, to an initial intake of 164 in 1970.

A massive in-service educational program had been planned for a decade, to assist in the leveling of the primary teaching sector which is approximately 98 percent Zambian. Six thousand out of the 13,500 primary school teachers chosen for in-service education were headmasters (principals), inspectors of schools (supervisors), education officers, teachers, college lecturers and subject specialists.

The International Bank of Reconstruction and Development (IBRD) made available over $1.4 million for capital development including a television station, which was assisting with the in-service education program.

Both projects have now been integrated into the School of Education, University of Zambia, and complement each other. For the first project (REG 66), a total of 432 man-months for specialist services were provided and for the other project (ZAM 4), a total of 426 man-months for specialist services were provided. A total of 20 specialists were allocated for both projects.

A sum of $128,500 had been expended on equipment and supplies for REG 66, $12,811 in 1964; $30,013 in 1965; $16,739 in 1966; $25,625 in 1967; $53,000 in 1968; and $5,978 in 1969.

Considerable emphasis was laid on in-service training. Vacation courses (short courses offered during non-school periods) on useful topics were held three times a year, mostly in mathematics, the sciences, as well as professional fields of education.

As seen earlier, one objective of the project was to provide a cadre of Zambian secondary school teachers. The extent of their need has been

shown in the tables and figures given earlier. Another objective was to help provide Zambian lecturing staff for the university. This has not yet been achieved.

During the period 1964-1969, project REG 66 prepared 388 graduate secondary school teachers and the in-service training program embraced 597 teachers.

In summary, Project REG 66 has contributed to a great extent towards the achievements of the educational goals of the nation, but still much remains to be done.

Training of Secondary School Teachers at University of Zambia

A project for the training of secondary school teachers at the University of Zambia, originated in a request by the Government of the Republic of Zambia in January, 1966, to the United Nations Development Program (UNDP). This request was approved by the Governing Council of the Special Fund (SF), in June, 1966, and a Plan of Operation was signed on August 9, 1967, and authorization to start operation was given on September 5, 1967, for a duration of five years.

From its beginning, this project, ZAM 4, became integrated with the "Secondary School Teacher Training Project", REG 66, started in the University College of Rhodesia and Nyasaland, Salisbury, in 1963, which later on moved to the University of Zambia after the unilateral declaration of independence by Rhodesia in November, 1965. The two projects thus became complementary; REG 66 focusing its activities primarily on post-graduate teacher training, and ZAM 4 on under-graduate teacher training.

Contribution

The total Special Fund contribution amounted to $1,241,623 with equipment worth $115,000. The Government of Zambia's contribution to the project including staff, land buildings and services, etc., was $7,302,304, plus a contribution of $113,200 toward local operating costs.

In Zambia, on January 1, 1971, 88 percent of the secondary school teaching force was expatriate and it is expected that at the end of second phase of the project in 1976, the percentage of expatriate teachers will be lowered to 53 percent of the secondary school teaching force. With the existing teacher training facilities, the total Zambian secondary teaching force will rise from the 1969 figure of 170 to 2306 in 1978.

The above two projects have fulfilled a most valuable purpose, though much remains to be done before national needs for Zambian teachers are met.

Summary

Basic facts about the country, Zambia, have been discussed in this chapter. They can be summarized as:

1. Information about geography of Zambia provides constraints it can lay on the plan of Learning Resource Centers.
2. The economy of the country can play an important role in the establishment of Learning Resource Centers.
3. A review of educational systems of Zambia, provides necessary background.
4. The organization of educational system provides the power structure in Zambian education.

5. Growth in education in Zambia through 1978 provides the basis for prospective planning.
6. Trends and problems enable us to identify the felt needs.
7. National and international foreign aid given to the country provides a possibility of insured continued help.

Chapter III that follows, reviews the literature regarding Learning Resource Centers and developing countries.

CHAPTER III

Review of Selected Literature

An extensive amount of literature exists on the subjects of developing nations and on learning resource centers. But, very little information is available on learning resource centers in developing countries. A review of the literature on developing nations and on learning resource centers is unwarranted in view of the restricted nature of this study and its main purpose, the learning resource center in developing countries such as Zambia. With that in view, the material reviewed in this chapter is confined to literature which is relevant to this topic.

A wide search for literature was undertaken. Resources of the Wayne State University Library were first searched. The search was continued in the Detroit Public Library. Some information about the economics and geography of Zambia was collected. While the researcher attended an Association for Educational Communications and Technology (AECT) convention, [illegible] search for literature was conducted on the "Dialog" Information Retrieval System through the computer center at Palo Alto, California. Some information on developing countries and their programs was collected, but the material could not be traced in the library. Two other computer searches were conducted on the Wayne State University Bibliographic Listings from a computer search of the 1970-71 ERIC file. Little useful material was available. The researcher also visited the University of Michigan Library and its Human Resource Area files section.

Nothing useful was collected from the Area files.

The researcher contacted Dr. George Crank at the UNESCO Headquarters in Paris. He was kind enough to supply reports and the latest information and projected development needs for qualified teachers for Zambian education.

A meeting with Mr. Michael Guido, Chief, Training Section, U.S.A.I.D., at the Minneapolis AECT convention, enabled the researcher to get some useful feedback on this study and much background information on foreign assistance to Zambia.

Dr. Robert Morgan of Florida State University supplied information on developing countries, their programs and problems.

Mrs. Florence Thomason, President, AECT International Division, and Dr. J.J. McPherson supplied valuable information on Audiovisual Centers in Latin America.

The Office of Education, Information Center on Instructional Technology, Washington, D.C., supplied some useful information on the use of technology in education in developing countries. Contact has been maintained with the Zambian Information Services in New York as well as the British Information Services. Mr. Rusbridger of the Center for Educational Development Overseas, London, has provided information on the state of affairs as they are now and on foreign help in educational, financial or consultative ways. All possible attempts were made to identify and locate useful information and materials.

The literature has been reviewed in the following areas: (1) Definition of Developing Nations and the Learning Resource Centers, (2) Use of Instructional Media in Developing Countries, (3) Learning Resource Centers in Developing Countries, (4) Zambia's Pressing Needs for Education,

(5) Foreign Help for Development.

Definition of Developing Nations and Learning Resource Centers

The United Nations through one of its specialized agencies, the United Nations Educational, Scientific and Cultural Organization (UNESCO), has been an advocate for the development in various aspects of developing countries. Thus, it is worthwhile to look to them for the definition of developing nations. In a report published by UNESCO, the developing countries are defined as follows:

> UNESCO has suggested, as an immediate target, that a country should aim to provide for every 100 of its inhabitants at least the follow- facilities:
> Ten copies of daily newspapers;
> Five radio receivers;
> Two cinema seats;
> Two television receivers.
> As many as 100 states and territories in Africa, Asia and Latin America fall below this very low "minimum" level in all four of the mass media. Those countries have a combined population of 1,910 million, or 66 percent of the world total . . . The above evaluation of development of the mass media in some 120 countries corresponds very closely with the United Nations' designation of countries which are generally underdeveloped. With due regard for the limitations of the method of classification used, the United Nations considers that a country is underdeveloped if the average per capita income is less than $300.00 annually. One hundred and one countries are found to be below this income level and an additional 16 countries fall within the $300.00 to $400.00 range (UNESCO, 1962, p. 16).

This definition by UNESCO is particularly useful to this study as it deals with the various components of media as a basis of the extent of development. The United Nations is more concerned with economic development, and hence it has taken the per capita income as its standard. We then get two useful measures for assessing the development of a country. The economic aspect is particularly important while considering an educational change and program like the Learning Resource Center, since considerable amount of money is going to be involved initially.

In the absence of any other definition, this definition will be accepted for the purposes of this study.

According to the above definitions Zambia falls under this category of "developing nation." According to Alan Rake, (ed.) as stated in "Africa 71," per capita GNP was $180 (Rake, 1970, p. 429).

In African Experience, Vol. II, Paden and Soja write:

> Comparing the UNESCO "Minimum", the actual figures from Africa in 1965 were, for each 100 persons, about one daily newspaper, about four radio sets (the use of the radio had grown dramatically since independence), one-half a cinema seat, and one-tenth of a television receiver. These figures have increased somewhat since 1965, but it is nevertheless clear that for a continent of over 300 million people and with 42 independent states, the existing mass media (with possible exception of radio) are grossly inadequate (Paden & Soja, 1970, p. 188).

Alan Rake (ed.), again in "Africa 71," states that with a population of 4.2 million (1969) Zambia has 80,000 radios, 15,000 television sets. The main daily, the "Times of Zambia," has a circulation of 50,000 copies. The quasi governmental "Zambia Mail" has a daily sale of about 20,000. Information about cinema seats is not available (Rake, 1970, p. 429).

The information given above conclusively establishes that Zambia is a developing country.

Many definitions of Learning Resource Centers have been put forth. The American Library Association and the National Education Association have agreed upon the following purposive definition for a Center. The Center provides:

- consultant services to improve learning, instruction, and the use of media resources and facilities;
- instruction to improve learning through the use of printed and audiovisual resources;
- information of new educational developments;
- new materials created and produced to suit special needs of students and teachers;
- materials for class instruction and individual investigation and exploration;

> -efficient working areas for students, faculty and media staff;
> -equipment to convey materials to the student and teacher (American Library Association & National Education Association, 1970, p. 4).

People in the systems field believe that a Learning Resource Center is that system of function and processes which allows the learner to learn and the teacher to teach. Thus, both these definitions are complimentary.

Use of Instructional Media in Developing Countries

Providing education to the growing multitudes of children in the world in general, and developing countries in particular, has been an acute problem to many new countries.

> Hundreds of thousands of children, whether attending school or not, are still not receiving the education which would enable them to play an effective role in a constantly evolving society (UNESCO, 1967, p. 13).

Many developing countries in the world today are using some form of instructional media in education. Few countries have made fairly widespread use. Instructional media in such countries have been used to solve some of the pressing problems facing each nation. Schramm has enumerated them:

> . . . the tide of pupil rising to a flood, a shortage of adequately trained teachers and adequate facilities, stiff competition for such resources of manpower and money as are available and new demands on the content and quality of education so great that it is necessary to teach more and teach better merely to keep from falling further behind . . . It is not surprising that he sometimes toys with the idea of trying less conventional methods such as "new media", which is the name he usually gives to instructional television, radio and films (Schramm, Coombs, Kahnert, & Lyle, 1967, p. 13).

These media have been used to do a variety of educational and developmental tasks. They are being used to help upgrade instruction. In American Samoa they have been used for accelerated development; in Haggerstown for sharing expertness; in Niger for making the most of resources; in Colombia as a context for education; in Nigeria for teaching under difficulties and in Thailand

to reach a number of rural schools.

Media have also been used to teach teachers. In Algeria they have been used to meet a post-independence emergency. United Nations Relief and Works Agency (UNRWA) used media to solve the unending problem of more teachers.

Media have been used in Australia to extend the school, in New Zealand to provide opportunities to remote families, in Japan for the working youth, in Italy for meeting the scarcity of secondary schools, in Peru to reach the "lost" students.

The road to the use of media in African education was paved by the Conference in 1962 on Higher Education in Africa, held at Tananarive (Madagascar). Part of the report reads:

> Higher education in Africa must assume a positive role in improvement of its educational system . . . the responsibility to do so will be realized through the preparation and publication of textbooks and of teaching materials including laboratory specimens, programmed learning, charts, maps, filmstrips, tapes, records and other audio-visual aids (Conference on Higher Education, 1962).

Another conference held in 1963 at Addis Ababa further emphasized efforts to improve quality in education through the use of media.

> One aspect of the effort to improve educational quality is the development of new aids for teaching. The blackboard and the textbook have done good service for half a millennium, but that does not mean that the presentation of information cannot profit from a little re-design (Addis Ababa Conference, 1963).

C.E. Beeby has shown a close relationship of teachers training and education to the type of schools that exist at different levels of development.

> If teachers are little educated and untrained, school consists of little more than mechanical drill on the three Rs and the memorizing of relatively meaningless items. This is the first level. If teachers are little educated but have had some training, teaching becomes more formal. This is the stage of formalism. Teaching is more systematic, the curriculum is fixed and centrally determined, instruction is policed by inspectors and external examinations,

> but the student still learn mostly by rote. The teacher in a village school who has himself struggled to a doubtful grade VI or grade VII level is always teaching to the limit of his knowledge. He clings desperately to the official syllabus and the tighter it is, safer he feels. Beyond the pasteboard covers of the one official textbook lies the dark void where unknown questions lurk. Give a teacher a little more education, more training and he moves into a third level of teaching which is the stage of transition. The teacher is a little further beyond his pupil now; he has more confidence and can let them adventure a bit on their own. Supplementary readers come in along with textbooks. The official syllabus remains, but it is broader and the teacher more often goes beyond it. The basic tools will be taught efficiently, but subjects like composition and arts will tend to be "dead as mutton". The next step the fourth level of education is one where teachers are well trained and well educated, where problem-solving and inductive learning begin to play a large part in the classroom and where the teacher has enough confidence in himself to let the students learn rather than merely drilling them (Beeby, 1966).

A need of developing countries is to bring the teachers from the first and second level toward the fourth level. This process can be hastened and facilitated with the use of media. A teacher can be updated where he is working, so the effective teacher is not moved out of the school to get training and the students do not suffer from his absence. This idea was well substantiated by a Conference of Ministers of National Education of French-speaking Afro-Malagasy Countries, which met at Liberville in February, 1968.

> The failure of educational systems to adapt themselves to a rapidly developing environment raises serious problems. A high rate of school attendance frequently means a large and statistically significant number of children who will never succeed in having a minimum education. In fact, the general trend has been to continue on a large scale what was done before; in many cases this meant doing things less well. Today however, a large quantitative expansion in education must be accompanied by equally important changes in structure, content and methods (Conference of Ministers of National Education, 1968).

Schramm and others have commented on the distributive power of media and how it can help the developing nations.

> A theory of educational use of the media must almost necessarily begin with the distributive power of the media - their ability to

> multiply and disseminate with great efficiency some selected parts of the information available to the system in which they work. Used in an educational system they let educators distribute teaching resources in a more efficient way. Whereas the older media such as the book, could distribute the substance of teaching, the new media, notably radio and television, can share teaching itself. With their help, the educator can share some of his best teaching more widely, offer specialized teaching and special subjects where they would otherwise not be available and in some cases extend the opportunities of schooling beyond the school (Schramm, et al., 1967).

They further suggest that media must be integrated into the educational system.

> To do this well, the media must be integrated into the educational system. They cannot stand apart from it; their content is the systems content; their teachers are the system's teachers. This implies broad involvement, acceptance, support. It implies also that a context of learning activity will be built around the media at the point of reception. Except in the rarest instances, the media connot be counted upon to do an adequate educational job alone. It is not enough to try to pour content into listeners or viewers; rather the goal is to stimulate learning activity. This means that special pains must be taken with the content to stimulate this kind of activity and that planned activity must be built around the media, whether is a classroom, in an out-of-school learning group, or a village forum (Schramm, et al., 1967).

With the new media comes a fear that they are going to be very expensive. Are they expensive? Do they save money? Schramm and others haye a good answer to that.

> Do the new educational media save money? We pointed out that this is a very complex question requiring one to measure quantitative cost against some things not so easily qualified - the quality of education for example. Media projects will rarely save over present budgets, but often make possible a substantial saving in the content of growth and change - when a school system is planning to change a curriculum, offer new and different subjects, extend its services to persons or places where education has not before been available or bring more people into the company of literate and educated persons . . . Even here, however, the saving is usually against possible or projected costs rather than present costs. Very often the media make it possible for a school system to do what it could not otherwise have done, regardless of cost; or to do faster what could otherwise have taken longer. And regardless of the quality of the evidence that they have saved financial resources, there is no doubt that they have contributed to the saving of human resources (Schramm, et al., 1967).

Janos Dusz sums up his recommendations of various steps for the developing countries as follows:

1. The formation of government policy for the introduction and spread of up-to-date educational techniques
2. Organizing the national center for audiovisual media
3. The basic points of elaborating a national audiovisual development programme (Dusz, 1972).

Developing countries have thus faced educational problems and tried to use "new media" to solve them. But it has been, many times, an isolated effort. If all resources are coordinated and if an organized attempt is made, many educational problems facing the developing nations can be considerably effected.

Learning Resource Centers in Developing Countries

Janos Dusz has suggested that national centers for audio-visual media be established in developing countries with some specific functions as follows:

1. Specialist management of the realization of the programme drawn by the inter-ministerial committee - if necessary doing also the secretarial duties.
2. The organization of national audio-visual and methodological information.
3. The basic institute for the necessary basic and applied research.
4. The basic institution of audio-visual technical and methodological training.
5. The basic institution for the preparation of fundamental audio-visual educational materials.
6. National audio-visual technical and methodological advisory groups.

Obviously, the content of the main tasks may vary according to the condition. The organizational pattern may differ also, but without the central organization of the functions mentioned above, the realization of national development doubtful (Dusz, 1972).

Dr. Baikie sounds a note of caution on th unplanned media programs in the developing countries:

> A discouraging aspect of media programmes in developing countries is that the life of most of them is usually short or not organized. In our enthusiasm to establish media programmes, we often forget to consider the important ingredient that would sustain the life of the programme we are about to build. We haphazardly rush into operating programmes without adequate initial planning. Among the pre-requisites for the success of a programme is good planning from the outset (Baikie, 1970, p. 8).

While planning, certain factors should be taken into consideration. Dr. Dennis Pett has classified these factors as follows:

1. Authority Factors--Those factors which authorize the establishment and development of the program
2. Functional Factors--Those factors relating to the client system and the change agent that affected the personnel, space, equipment, and administrative structures necessary to carry out the program.
3. Environmental Factors--Those factors outside the client system change agent structure relating to the general developmental environment (Pett, 1966).

A new educational media project can be effective if it begins with a problem concerning the nation rather than a piece of new technology. The new media project should start as an appropriate technology. The new media project should start as an appropriate technology that could try to resolve a recognized and significant problem facing the country. Wilbur Schramm and others have listed the following seventeen elements that seem necessary for more effective media development:

Preliminary decisions:

1. A review of needs and evaluation of alternatives
2. Selection of an alternative of feasible size
3. Allocation of adequate financial resources

Matters of organization:

4. Strong support from top authority
5. Unity of purpose among the responsible authorities
6. Broad involvement

Matters of planning and preparation at center:

7. A planned and phased introduction of the new medium or method
8. Technical adequacy

9. A well trained technical and programme staff, and continuity of key personnel
10. High-quality media content, based on the national goals

Matters of relationship between center and points of use:

11. Necessary logistics for delivering materials
12. Provision for feed-back for users
13. Continuing contact with teachers or monitors

Matters connected with providing an effective context for learning at the receiving end:

14. A study or discussion group at the point of reception, adequately equipped and supplied
15. Arrangements for maintaining receivers and other field equipment
16. Competent supervision of learning activity at the point of reception
17. Some direct contact between pupil and teacher, if study groups cannot be brought together (Schramm, et al., 1967).

In short, new media should not be looked upon as the pedagogical panacea for all educational ailments. They are potential system components that can be used effectively to vitalize the educational system. Careful attention must be paid to the above elements in order to use the media centers effectively.

Zambia's Pressing Needs

As seen earlier in Chapter II, Zambia's Primary school enrollment is projected to rise from 659,000 in 1969 to 1,026,000 in 1979. Secondary school enrollment shows the same pattern of rise in enrollment, from 47,000 in 1969 to 86,200 in 1978. These projected figures show that the number of students is almost going to double. A corollary to this increase in enrollment is the need for more qualified teachers to teach in the primary and secondary schools of the country as well as in institutions of higher education.

This increase is in keeping with the promise given to the nation by the President of the nation, Dr. Kenneth Kaunda, in 1964.

> With a rapidly increasing population we have a high population of young people, and when we think about the general welfare and improvement of the country, we are thinking mainly of the younger age group (Hall, 1965).

These statements cited above show the country's concern regarding the educational needs of its young generation and its commitment to find ways and means to achieve them.

Foreign Help for Development

Facts in Chapter II showed that many countries and agencies have come forth to help the developing country, Zambia. Britain was associated with Zambia as early as the Colonial (1924-53) period, thus British influence in educational development has been marked. Another country that came to the aid of Zambia was the U.S.A. U.S.A.I.D. has helped Zambia and international organizations such as the International Bank for Rural Development have loaned sizable amounts for making newer and better schools for the country. UNESCO has been, and is helping the country to become self-sufficient in terms of teachers through its project to prepare teachers for the country.

China helped Zambia develop a train link for better communication at an estimated cost of $377 million. As a consequence material for instruction, teachers, and other educational support elements can move across the country rapidly.

There is a need to centrally coordinate the assistance received by the country in different forms and to put all these resources to the maximum educational use of the country. A central organization involved in the optimum use of learning resources can do it.

Summary

In summary, literature in the field has been reviewed in this chapter. The highlights of the review of literature are:

1. Extent of communication facilities and per capita income are the criteria by which a country is judged to be a developing nation or otherwise.
2. Providing education to the growing multitude of children has been an acute problem in developing countries. Getting qualified teachers is an equally difficult problem.
3. There is a close relationship between teacher training and the type of school that exists at different levels of development. The problem of a developing country is to bring its teachers from the mechanical drill on the three Rs level to where problem solving and inductive learning begin to play a large part in the classroom.
4. Use of new media will rarely save over present budgets, but they often make possible a substantial saving in the context of growth and change.
5. A Learning Resource Center can take care of proper selection, use and maintenance of media for education in a developing country. It can also look after production of instructional material suitable to the needs and culture of the country.
6. Various steps towards the use of media are (a) formation of government policy for its introduction and spread, (b) organizing the national center, and (c) elaborating national audiovisual development program.
7. In the enthusiasm of establishing media programs adequate initial planning is neglected. The program suffers because of that inadequate planning.

8. Certain factors--Authority factors, Functional factors, and Environmental factors should be taken into consideration.
9. The new media project to be effective, should address itself to the felt needs of the country.
10. Necessary elements for effective media development should be provided.

In Zambia, the country being used as the basis for the model, school enrollment is on the rise, and so is the need for more qualified teachers. Need for updating curriculum to suit the needs of the country is ever pressing and so is the need to produce instructional material to suit the culture. The instructional materials have to be evaluated, adopted and/or adapted to suit the needs of the country.

Each of the individual items found in the literature review in this chapter will be used as the guiding principles from which the specific philosophy will be generated and out of which will emerge the proposed plan for the model Learning Resource Center for Zambia.

Chapter IV will contain the discussion of the experience of developed countries regarding the use of Learning Resource Centers in education. The philosophy of such centers eill be discussed in the chapter along with purpose, plan and personnel.

Based on basic facts discussed in Chapter Il, review of literature in this chapter, the experience of developed countries in Chapter IV, Chapter V will develop philosophy, purpose, plan, program and personnel requirements for a Learning Resource Center for Zambia.

CHAPTER IV

Learning Resource Centers in Developed Countries

There have been some very drastic changes in the living styles and conditions in the world during the last 30 years. Mass media and technology have been acting as catalytic agents in the process of change in various fields, and education is no exception. As Paul Heimann describes:

> In the wake of these new living and world conditions, there are people who until now have existed merely as pawn in a game of historical power and whose intellectual and political maturity has gained at the rather dangerous moment when their own world is threatened with the collapse of its scale of values. Since becoming active on the historical scene, these masses (for it is with them that we are concerned here) have become shouldered with responsibilities and are conscious of educational needs which hitherto arose only in the training of an elite. This process which Karl Manheim has described at the "fundamental democratization of our society, can bear fruit only if the masses are provided with educational and teaching aids of a completely new type.
>
> Mass media are, in fact, the catalysing agents in a vast process cultural change, which they reflect and constantly further and modify. It is precisely this which makes them so outstandingly important for education, regardless of the direction in which their influence may radiate. They have contributed to the development of a revolutionary situation in education which makes demands on the general educational perception of modern teachers-demands which cannot be ignored (Heimann, 1963, pp. 8-9).

The late James Finn looked at this invasion of technology on education and was concerned that professionals in the field had not developed a point of view or position.,

> Turning now to education, it becomes apparent under this national and international drive for technological superiority that: (1) those concerned professionally with education have not developed a well-conceived point of view and a position and/or positions concerning technology and education, (2) because of this lack of point

> of view and because of certain cultural lag factors naturally associated with education, the acceleration of technological developments has tended to bypass the entire educational enterprise until very recently, (3) professionals in education are not prepared now to deal with the tremendous impact that technology is beginning to have on the instructional process itself as, by the technological process of extension, technology begins to invade education with full force (Finn, 1960, p. 8).

Fred Urban says,

> Today, life in the classroom is far more complex than ever before. The curriculum has expanded and it is under great pressure to change. The recent explorations to the moon, as an example, will have a tremendous impact on the current teaching of the universe, astronomy, and space exploration. The classroom teacher cannot do the job alone (Urban, 1969).

Benjamin Isenberg suggests that the extent we will be able to cope with the change and explosion of knowledge and technology will depend upon:

> The degree to which we succeed in helping children meet the demands of an enormous explosion of knowledge and in developing skills for application of knowledge will depend on how well we deploy people, places and things in restructuring the teaching-learning processes.
>
> As we move steadily towards greatly individualization of learning opportunity, we edge further away from the self-contained classroom and the old study hall. Instead we look for an instructional system that provides the best opportunities for discovery by both individual and group effort . . .
>
> Maximum utilization of the resource centers will give each student unique experiences in learning. Research and discovery skills will develop to a high level thereby providing what we know to be most important learning possible for students in today's world, the ability to seek, put, relate, compare, and analyze information and apply knowledge.
>
> If we are successful in fostering these attitudes, then we are preparing students to live in the world we described (Isenberg, 1969).

Both as a consequence and as a precurser the learning resource center concept has impacted education. The examination of the current philosophical base which follows forms a point of departure from which the learning resource center in a developing nation can be evolved.

Philosophy of Learning Resource Center

Education is esentially creative It involves irtellectual, physical and social skills of pupils. The learning process begins with a clear statement of desirable human values as shown in the attitudes and actions of students. The teacher and media specialist must be aware of these characteristics which can guide most effectively the learner's development. Then the educational experiences which will be most helpful must be identified and the most effective tools and materials located. The pupil needs to learn such skills as reading, computation, observation, listening and social interaction. He must also develop a spirit of inquiry, self-motivation, self-discipline and self-evaluation. He will need to master knowledge in many disciplines and develop a number of complex skills. Ultimately, he must communicate his ideas with his fellows.

Milton Wastenberg and Muriel Gerhard present the following basic premises underlying educational purposes that

> Education is a process in which pupils, teachers and curriculum interact. This process of interaction results in desirable changes in pupil's behavior. Goal areas of education are knowledge, tool skills, thinking processes, self direction, social effectiveness and human values (Wastenberg & Gerhard, 1969, p. 17).

In this entire process the Learning Resource Center plays a vital role. The media found here will convey the information, affect the message, control what is learned and establish the learning environment. They will help to determine what the pupil sees and what his attitude will be toward the world in which he lives. For this reason, it is important that the media specialist participate actively in shaping the learning environment and the design of instruction. Every media facility, piece of equipment, book or material should be selected, produced and used so that students

are challenged to a dynamic participation in a free, exciting and enriched life.

It is a common complaint by many people in our present day society that the youth of today fail to receive a quality education. The need for quality education cannot be denied. The technology of our present day system necessitates not only knowledge, but skill in the use of ideas presented to those undergoing the educational process. The school which can face and facilitate the needs of modern technology can be said to be presenting a quality education.

Students entering the present day school system come from a multi-media home situation and chould not be expected to be channeled into a system where an antiquated single method is used. The use of the Learning Resource Center is one of the best methods available to begin educating for quality education.

John Church observes:

> In colleges and school districts, throughout the nation, organizations have been established for the administration of instructional materials and to facilitate curriculum planning. These organizations bear such names as curriculum laboratory, instructional materials center, teaching aids laboratory, educational communications center, new media center, learning resources center, or various combinations of these terms. The functions of some of these organizations are divided between audio-visual centers and educational or professional libraries.
>
> In many of these organizations there is a definition of administration of instructional materials that is consistent with this statement: The administration of instructional materials, embraces the organization and leadership for making instructional materials available for use in planning the guidance and nurture of student growth (Church, 1970, p. 1).

High quality education is expensive, but far more costly is the waste of human resources in poorly educated students whose talents are lost to the nation. No two students learn and progress at the same rate. By

continuing to aim toward the middle of a class, the teacher automatically eliminates the botton 20 percent and the top 10 percent. There must be some way to meet the needs of all students.

According to Gagne, there are eight separate types of learning, each one best for a specific area. It is the intelligent and educated teacher who utilizes more than one method of instruction. One method of getting through to more students has been developed with the application of individualized programmed learning. Learning Resource Centers should meet the needs of all students at their own rate.

Learning Resource Centers enable students and teachers to make a multi-media or inter-media approach to and use of materials in a unified program. The availability of many materials in a variety of formats gives students and teachers an opportunity to select from among many resources the media best suited to answer specific needs.

The philosophy of the Learning Resource Center is one of "service", to both the student and the teacher. For the student, the Learning Resource Center provides material for learning in which he may develop his skills to obtain higher academic goals as well as progress in areas that often are initiated by other interests and needs. This can be done through remediation, reference, clarification and motivation.

The Learning Resource Center, in relation to the teacher, provides for new ideas, concepts and services which support, compliment and expand the work accomplished in the classroom. Learning Resource Centers help the instructor in the development of new materials to aid instruction, to enrich instructional programs, and to provide in-service training in new material and media.

An ideal Learning Resource Center would enable the teacher to pro-

duce materials in conjunction with the students, test, evaluate, re-write and re-test, then have these final products available not only to his students, but to all who require them.

Learning Resource Centers improve instruction by the faculty through providing facilities, leadership and guidance in the development and/or use of instructional materials, resources and equipment.

The Learning Resource Center can centralize the location, procurement and control of instructional media in a manner that makes it readily available for use, thus avoiding unnecessary duplication of collections, staff, equipment. This way it provides maximum use of the material and equipment to students and faculty alike, for multi-media exposure to learning situations. A Learning Resource Center can provide cost saving benefits in the above areas of the budget.

The Michigan Department of Education considers media centers from the following point of view:

> The rationale for establishing regional media centers is to make maximum use of minimum resources . . .
>
> Regional Educational Media Centers - A facility which provides basic educational services in educational programs, technological equipment, instructional print and non-print materials, and training and promotion in their use, to local school districts (Michigan Department of Education, 1971).

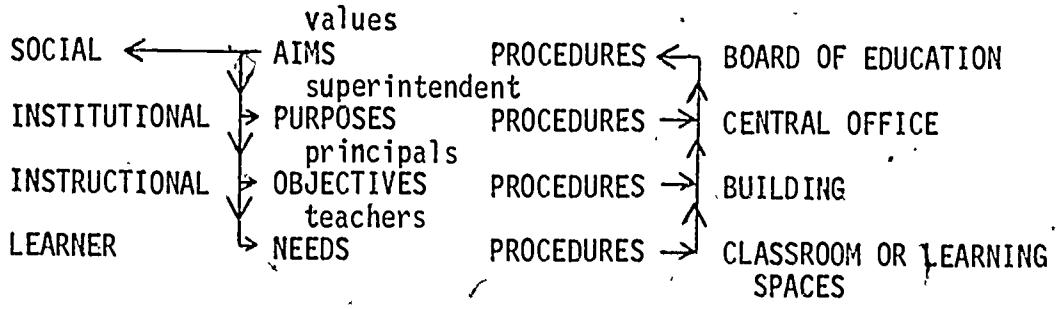
A Learning Resource Center is responsible for educating teachers to meet the challenges of the community they serve. It is an agency, serving the faculty members and the students of the system. Its organization and operation are based on the philosophy that it should function as an integral part of the teacher education program. The Learning Resource Center will provide extension services which will offer services to interested persons and institutions in so far as the resource center can

accommodate their needs or desire.

Learning Resource Centers maintain a position of leadership in making maximum use of the latest technology in accomplishing the tasks placed before both the learner and the instructor.

In short, there are four levels of purposes and procedures for a media center as shown below. There must be substantial agreement in the directions these goals take. Robert Gerletti envisages the following basic directions:

> A media center is whatever we choose it to be. At the present time it has many forms. The form it takes is based on an idea, a concept, a philosophy held by a person or persons in a school district.
>
> What seems to differentiate one center from another besides the name that is given to it? The key question seems to be, "What do learners do in the centers and how did they get there?"
>
> Four reasons why learners are in the centers:
> - They are in the center on their free time browsing to obtain information in which they are interested.
> - They are there to prepare an individual or small group report. They have been sent by their teacher or they are in there on their own accord.
> - They are there to sample interest centers established as a result of needs expressed by teachers or students or principals or coordinating teachers.
> - They are there as an integral part of courses of study in which they are engaged. The student in this case is actually programmed by design into the center for information, to learn a skill, to foster an attitude or all three.
>
> If we were to describe, a function of both centers, (School Center and District or Regional Center), we might say they are pumping stations, pumping materials into the educational process as needed.
>
> There are four levels of purposes, and procedures. There must be a good deal agreement in the directions these goals take or you will have an uncoordinated, undirected, and fragmented program.



(Gerletti, 1969, pp. 21-23).

Need/Purpose for a Learning Resource Center

Educational institutions are facing a number of problems because of a shift in emphasis in educational thinking. The open-door policy, for example, brings in a learner with a wide variation in pre-requisite skills, ample individual differences, variety in pace of learning, cognitive styles and many others. Educational philosophy and practices, as seen earlier, stress individualization, inquiry approach, independent learning, self-motivation and self-evaluation.

By utilizing and emphasizing the needs, abilities and individual rate of learning of students, we will be able to teach more effectively in the same amount of time. The student will feel a greater sense of accomplishment. A Learning Resource Center will assist in making complex concepts clearer by offering the student a variety of media with clear and precise steps, which will pull the learner into formulating decisions, ultimately resulting in learning. As the student uses a self-paced program, the teacher is free to work on the design of materials and new approaches.

The long term advantage of the Learning Resource Center is to provide face to face instruction in small groups to the maximum extent within the plan of teaching and learning, as all media are now available through

a single facility. The Learning Resource Center satisfies a need of the teaching staff for supplementary materials, professional help in planning and setting up programs, and for a central location for needed equipment and materials

The Learning Resource Center helps the modern educator fulfill his role of bringing educational experiences to his students. The Learning Resource Center is one location in which educational experience may be properly developed.

The standard traditional classroom approach has not worked. We are not meeting the needs of the students and therefore we must try a different approach.

The major specific purposes of the Learning Resource Center, as stated by Jerry Herman are as follows:

1. To combine a variety of specialized services in such a way that teachers are given maximum assistance in the enrichment of the educational environment of the individual student.
2. To organize the mechanical aspects of the specialized services in such a way that maximum information is given and motivation promoted, while a high degree of efficiency is maintained and the cost of such services is minimized.
3. To provide such materials, supplies, demonstrations, and assistance as are deemed necessary for the continuous enrichment of curricular offerings, while giving foremost consideration to the varied interests, abilities, achievements, and maturities of the students to be served.
4. To provide a single clearinghouse wherein teachers and students are provided speedy and easy access to the variety of instructional materials, equipment, and supplies which are not readily housed or controlled at the local building level.
5. To locate, collect, arrange, catalog, and distribute materials, informations, and supplies which are pertinent to and amplify upon the curricular offerings.
6. To assist teachers to help children grow in knowledge and skill by generating an understanding of and desire for expanded learnings.
7. To provide advisory services in the procurement, preparation, distribution, uses, evaluation, storage, and maintenance of supplies and equipment.
8. To promote, through the media of planned in-service education programs, such understandings as are necessary to motivate

maximum teacher and student use of the variety of enrichment services available (Herman, 1971, p. 2).

Functions and Services of Learning Resource Center

Every piece of material and equipment in the Learning Resource Center should be used so that students are challenged to greater participation. The Learning Resource Center should enable students and teachers to make a multi-media or inter-media approach to any learning situation. The choice of many materials in a variety of formats gives students and teachers the opportunity to select the media best suited to their specific needs. The Learning Resource Center provides learning opportunities for large groups, small groups, and individual students. The emphasis of the Learning Resource Center is on the learner, on ideas and concepts instead of isolated facts, on inquiry instead of rote memorization. Functions of the Learning Resource Center include guiding the student in studying effectively, thinking objectively and developing an inquiring interest in and enthusiasm for exploration and research. Since the present trend is to move away from textbook and teacher-dominsted instruction, the Learning Resource Center must support, compliment and expand the work of the classroom.

Kenneth Taylor lists the educational functions of Instructional Materials Centers as follows:

1. Large group instruction and student presentation
2. Small group conferences and media projects
3. Independent study and exploratory examination of materials
4. Production of materials for original communications
5. Reading, listening and viewing skill development
6. Guidance in the use of school and community educational resources
7. Preview and selection of curricular related materials
8. Preview and selection of materials appropriate to student interests and maturity levels

9. Preview and selection of materials for faculty professional growth
10. Inservice programs on instructional media (Taylor, 1969, pp. 52-57).

The services and facilities of the Learning Resource Center give the student opportunities to create and produce materials which may be the student's first experiences of success and accomplishment. The Learning Resource Center should provide information about new materials, make them easily and quickly available, produce needed materials, and assist teachers in keeping informed about recent developments. Information regarding the student's progress and problems should be channelled to the teacher. The student should be instructed in the use of and resources of the Learning Resource Center as needs indicate such a necessity. In short, the Learning Resource Center should provide:

1. Consultant services to improve learning, instruction and use of media resources and facilities.
2. Instruction to improve learning through the use of printed and audio-visual resources.
3. Information on new educational developments.
4. Production of new materials, created to suit special needs of students and teachers.
5. Provision of materials for class instruction and individual investigation and exploration.
6. Creation of efficient working areas for students, faculty and media staff.
7. Making available equipment to convey materials to the students, faculty and media staff.
8. Selection, cataloguing, storage and maintenance:

a. Printed material, e.g., books, periodicals, programmed material, maps,

b. Non-print material, e.g., films, filmstrips, transparencies, slides, etc.

c. Maintenance of projectors, recorders, cameras, binding of books and periodicals.

9. Dissemination of information and materials:

a. Regarding Learning Resource Center and its resources

b. Regarding latest developments in field of instruction

c. Meeting needs of individual student and staff.

10. Consultation and training of staff and students:

a. Provide staff with student progress and problems

b. In-service training on new methods and training of instruction

11. Production and design:

a. Designing new programs indicated by action research

b. Design of materials for new courses or programs

c. Printing and duplicating

d. Photography

e. Graphics

f. Television

g. Radio and audio recordings

h. Dial Access

In a survey conducted by the National Education Association in 1953-54, the types of services provided to school districts for audio-visual education were:

Obtaining free and rental materials for teachers upon request
Consulting with individual classroom teachers on use of audio-visual materials

Keeping classroom teachers informed of available materials and new acquisitions
Selecting and purchasing audiovisual materials
Providing operators and equipment for school use
Keeping equipment and materials in repair
Classifying and storing materials
Training operators of audiovisual equipment
Selecting and purchasing audiovisual equipment
Arranging previews of audiovisual materials
Assisting curriculum committees on appropriate audiovisual materials for instruction
Providing delivery and pickup service to schools
Providing operators and equipment for community use
Assisting in workshops for classroom teachers in demonstrating how to use audiovisual materials and equipment
Helping classroom teachers and students with the production of simple teaching materials
Photographing significant school activities.
Assisting classroom teachers in planning field trips
Producing audiovisual materials for the classroom
Assisting in producing radio programs (commercial stations)
Assisting in producing television programs (commercial stations)
Directing school-operated radio station
Directing school-operated television station

Others:
Assistance in planning and equipping school buildings for audio-visual use
Research work
Training of building coordinators
Audiovisual public relations work (National Education Association, 1955, p. 100).

Brown summarizes the function of the Learning Resource Center as follows:

> The Learning Center is based on the premise that learning is its true focus, but it is also based on other premises or assumptions. One of these is the change from storage to service - materials out - service in. Another is that the teacher will manage the learning of the student and the learning center will make its contribution by offering materials and services which will facilitate learning. Another assumption is that although the student is responsible for more of his own learning, the school is ultimately responsible for the student's success or failure . . . Another explicit premise is that the Learning Center as a service is a function or process rather than a thing or a place (Brown, 1967, p. 6).

William Trow sounds a note of caution in relation to teacher and technology:

> The new media will not be particularly effective so long as they remain mere adjuncts, an intrusion, a fifth wheel of the educational conveyance. The new parts need to be integrated into a man-machine system, and this requires clearcut readjustments in organization and procedure . . . The educational technologist envisions, not machine produced robots, but a smoothly functioning system in which the several processes it employs are all operating to turn out its product - and that product is educated people (Trow, 1969, pp. 86-88).

In the above case, media is not given its proper place in the instructional process and that inhibits the media from achieving its maximum potential. Another hazard is bringing in media just for the sake of novelty or because others have it. Alan Green has put it as follows:

> I think frequently we design facilities to accommodate the hardware. In visiting colleges and universities in various parts of the country, I see an unfortunate rush to get on the bandwagon and build facilities and buy TV projectors and install student response systems because its the thing to do, even though they don't utilize them effectively or at all. We are building the spaces to accommodate the hardware rather than the students (Green, 1969, p. 35).

Organization and Management of Learning Resource Center

A functional Learning Resource Center requires staff in sufficient number and with a variety of competencies. The professional staff provides teachers and students with a wide variety of services as mentioned earlier.

Carlton Erickson has developed six broad principles for organizing media service programs:

1. The work or organizing and developing instructional media services will proceed most effectively under specialized, centralized leadership, working coordinately with other curriculum personnel and under adequate system-wide financial support for auxiliary staff, equipment, materials, and facilities.
2. Media materials and equipment should be easily accessible to teachers at the time they are needed in an appropriate environment.
3. Instructional media equipment should be made available to teachers with a minimum inconvenience and distraction.
4. The instructional media service program should include a variety of materials for teachers.
5. The instructional media service program should provide for the

continuous, effective in-service growth of teachers in accordance with their needs.

6. Provisions for citywide instructional media services need to be based on continous long-term planning.(Erickson, 1968, p. 22).

Generally, the district media program provides the use of a variety of print and non-print instructional material for the student and teachers of the entire district. This is done at three levels:

1. the classroom level
2. the school media center level
3. the district media center level.

This arrangement presupposes that a variety of media must be as readily available to the learner as is economically and logistically possible.

These services can be offered only through competent personnel. To manage a Learning Resource Center at the district level, the following categories of personnel are needed. (Again, the appointment of one or more of these personnel is based on the economic and logistic feasibility of the district.) The following are suggestive and not prescriptive:

1. Media Director
2. Printing and Duplicating Specialist
3. Audio Specialist
4. Video Specialist
5. Graphic Production Specialist
6. Transparency Production Specialist
7. Cataloging and Processing Specialist
8. Equipment Servicing Specialist
9. In-service Training Specialist
10. Clerical Personnel

Media Director

A media director is the manager of district media services and coordinates the activities with the curricular director. As suggested in the "Guidelines for Instructional Services Programs," the responsibilities of a media director are ennumerated as follows:

a. Serves as the director, coordinator and manager of the district's media services and works closely with the curriculum director.
b. Plans and develops media programs for the school district and recommends priorities for media services.
c. Assumes supervisory responsibility for selecting, procurring, distributing, cataloging, inventorying, and retrieving instructional materials and related equipment.
d. Makes information regarding the locating and obtaining of media available to teachers, administrators, and supervisory personnel.
e. Motivates other personnel towards optimum use of instructional media and works to improve the physical environment for media utilization.
f. Works co-operatively with the curricular director, specialists and other school personnel in planning the instructional and in-service programs for the district, and is represented on all curriculum committees.
g. Submits proposals for innovative programs.
h. Formulates an annual media budget for the district and capital budget involving media equipment and facilities.
i. Oversees the operation and services of the district media center and the personnel assigned thereto.
j. Assumes responsibility for district media production services including television programs, museum, and audiovisual materials, as well as study guides necessary for their proper and full utilization.
k. Serves as a consultant in the design, renovation and operation of media centers and other facilities where media utilization is a consideration.
l. Assist in the evaluation of media programs at building and district levels.
m. Evaluates new technological developments and interprets research in terms of their probable effects upon the district instructional program.
n. Interprets the media program to school administrators and the community.
o. Maintains liason with other district supervisory staff and with regional, state and national media personnel (Guidelines for Instructional Media Services, 1970, p. 48).

Carlton Erickson identified several components of the media program director's role:

1. The Media Program Director as a Leader
2. The Media Program Director as an Educator
3. The Media Program Director as an Executive
4. The Media Program Director as a Supervisor and Consultant
5. The Media Program Director as a Technological Expert
6. The Media Program Director as an Equipment Technician (Erickson, 1968, p. 22).

Francis Noel states the following general duties of the Director and his professional assistants:

> The Director and his professional assistants should be responsible for or share leadership in the following areas:
>
> 1. Evaluation and selection of materials and equipment
> 2. Supervision of all aspects of utilization within schools
> 3. Consultation services to teachers, principals, supervisors, audio-visual coordinators, architects, and outside agencies on problems and activities in audio-visual education
> 4. In-service education programs for school personnel
> 5. Experimentation and research on evaluation, uses of materials, and needs for future production
> 6. Interpretation of school's program, including audio-visual education, to the school personnel and to the public
> 7. Production of special curriculum materials (Noel, 1949, p. 194).

Wilber Jones, in his doctoral study, identified 32 practices common to media directors in 112 programs throughout the U.S.A.:

1. Is clerical or technical help provided for: Keeping all equipment and materials readily accessible to all teachers?
2. Periodic inventories of equipment and materials?
3. Do you prepare reports for the administration on the status and needs of audio-visual services?
4. Do you involve teachers in the actual selection of materials and equipment?
5. Is clerical or technical help provided for: Keeping teachers informed of new acquisitions, materials, film confirmations, and pending equipment purchases?
6. Regular checking of equipment and materials to determine that all items are serviceable and in working order?
7. Maintaining records on equipment usage and costs?
8. Do you serve your superintendent or principal as an audio-visual consultant or advisor on matters of: Specifications of materials and equipment?
9. If you provide facilities and/or opportunities for in-service training for teachers, do you: Lend assistance in locating

source materials? (e.g., film catalogs, index of free films, etc?)

10. Is clerical or technical help provided for: Classifying and cataloging a wide variety of materials for teachers?
11. Making minor repairs, servicing or replacement of parts?
12. Do you utilize any of the following? Training opportunities for teachers, pupils, and technical personnel in the operation and care of equipment?
13. Do you provide facilities and consultative services to teachers and/or pupils in: Arranging preview sessions for films, filmstrips, etc.?
14. Do you provide for the acquisition of free and rental materials for teachers?
15. Do you serve your superintendent or principal as an audio-visual consultant or advisor on matters of: Improving physical facilities of classrooms in terms of: Acoustics, light control, room darkening or ventilation?
16. Repairing and/or servicing of equipment?
17. Do you involve teachers in establishing criteria for the selection of audio-visual materials and equipment?
18. Is clerical or technical help provided for: Preparing handbooks for teachers which describe the services of the Center?
19. Do you provide equipment and materials for special classes such as: Foreign language departments?
20. Do you serve your superintendent or principal as an audio-visual consultant or advisor on matters of: Providing information about equipment ratios and/or standards?
21. Do you provide equipment and materials for special classes such as: Special education classes? (e.g., Retarded or slow learners?)
22. Do you make available an extensive selection of audio-visual books and magazines as a professional library for teachers and other personnel?
23. Do you provide facilities and consultative assistance to teachers and/or pupils in: Planning the utilization of materials and equipment?
24. Is clerical or technical help provided for: Regular checking of sources of indexes of enrichment materials?
25. Do you provide student operators for equipment operation in the classrooms?
26. Do you serve your superintendent or principal as an audio-visual consultant or advisor on matters of: Curriculum revision and development?
27. If you provide facilities and opportunities for the audio-visual in-service training for teachers, do you utilize any of the following: Demonstrations on preparation and uses of materials?
28. Do you provide facilities and consultative assistance to teachers and/or pupils in: Arranging demonstrations and/or doing demonstration teaching when invited?
29. Do you devote a major portion of your time encouraging and stimulating teachers to develop a high degree of audio-visual competencies?

30. If you provide facilities and opportunities for the audio-visual in-service training for teachers, do you utilize any of the following: Individual conferences with teachers on audio-visual problems?
31. Do you provide publicity through appropriate media about the activities and services of the audio-visual center?
32. Do you provide facilities and consultative assistance to teachers and/or pupils in: Preparation and production of audio-visual materials? (Jones, 1949, p. 194).

Members of the Oregon Audio-Visual Association analyzed the duties of directors of instructional materials centers as follows:

1. Administrative
   a. Organize and maintain a central "Instructional Materials Center," serving all the schools within the district
   b. Supervise the organization and operation of the materials program within the separate schools
   c. Administer this program, within the assistance of the coordinator
   d. Determine the equipment and materials needs of the schools and determine what it will cost to fill these needs
   e. Keeps reports and records of materials, equipment, and their use
   f. Select and purchase new materials, with the help of teacher committees
   g. Select and purchase new equipment, with teacher and technical assistance
   h. Organize and administer an efficient circulation service
   i. Promote public relations leading to an understanding of and support of the program
   j. Make reports to the school administration concerning the operation and the needs of the program

2. Supervisory
   a. Supervise, through the coordinators, the operation of the program in the individual school
   b. Plan and carry on an in-service teacher training program through
      (1) Conferences
      (2) Staff meetings
      (3) Noncredit classes and training sessions
      (4) Extension (credit) classes
      (5) Demonstrations, previews, auditions
      (6) Inter- and intra-school visitations
   c. Confer with teachers regarding utilization of materials
   d. Visit classrooms
   e. Issue bulletins giving information on availability and use of materials and equipment
   f. Organize and make available a handbook giving information on the "Community Resources" available for educational use
   g. Train teachers to produce certain teaching aids

3. Advisory
   a. Confer with administrators in the planning of new buildings and the remodeling of old structures
   b. Assist in curriculum planning
   c. Advise administrators, supervisors, and curriculum specialists in the selection and use of equipment and materials for their work

4. Technical
   a. Organize and maintain a library of materials (books, records, pictures, motion pictures, filmstrips, slides, exhibit materials, etc.)
   b. Repair and maintain equipment and materials
   c. Produce or supervise production of certain materials (slides, exhibits, recordings, photographs, motion pictures, radio programs, etc.)
   d. Train teachers and students in the operation of equipment (Oregon Audio-Visual Association, 1952, p. 23)

LeRoy Lindeman conducted a survey of selected public school and University media experts as jury members, to construct a rank order listing of nineteen items. Though we may not agree with the rank order of the items, the items themselves, known as Utah State Board of Education Survey list, do give us an idea of the basic duties of the media director:

1. Promoting in-service teacher education.
2. Supervising and coordinating district A-V committee and supervising school A-V personnel.
3. Supervising the selection of A-V materials and equipment.
4. Co-operating with school architects on the functional planning of new buildings and remodeling of old.
5. Serving as a specialist in his field.
6. Organizing a department or center of audio-visual materials.
7. Keeping in touch with sources of new materials.
8. Preparing and supervising the expenditure of a budget.
9. Maintaining the district A-V library.
10. Consulting with teachers regarding utilization of materials.
11. Consulting with teachers regarding specific needs.
12. Issuing bulletins, newsletters, and information on A-V materials, etc.
13. Establishing minimum standards for equipment.
14. Classifying and cataloging materials.
15. Circulating materials and equipment.
16. Visiting schools.
17. Producing materials such as slides, film-strips, charts, models, etc.
18. Promoting public relations.
19. Repairing and maintaining materials and equipment (Lindman, 1965).

In 1961, an Okoboji AudioVisual Leadership Conference list of duties and responsibilities was prepared by the participants and was later reported by Lewis. The list reads:

1. Be directly involved in curriculum planning.
2. Promote among teachers, administrators, school governing bodies, and school patrons the concept that the use of resource materials in integral to instruction and not an adjunct to be used when time permits.
3. Establish an educational climate suitable for the optimum use of instructional media and materials.
4. Devleop new measures for determining the effectiveness of instructional materials in specific applications.
5. Be responsible for evaluating emerging innovations for possible introduction into the learning process and for interpreting and promoting those innovations which can make a significant contribution.
6. Become involved in the development of central classification systems that will permit rapid location of related instructional materials for specific learning situations.
7. Arrange for the production of instructional materials which are not readily available but are necessary for the instructional program, and provide the incentive, training, and materials for production by teachers and others.
8. Provide consultation opportunities for all teachers, including teachers-in-training, to secure assistance in the use of new media and materials in their lesson planning.
9. Contribute to the improvement of methods of communication within the profession on matters relative to the emerging practices and innovations, the exchanging of ideas, and the establishing of liaison with outside agencies--the "clearinghouse" idea.
10. Be involved in decision-making activities on such matters as building-planning, classroom design, etc., as they affect the instructional materials program.
11. Assume the leadership responsibility for initiating programs or activities that will bring about needed improvements and innovations.
12. Develop and implement instructional systems involving automation approaches to expedite free flow of information and ideas (communications center, learning labratories, random access devices, etc.).
13. Make use of research results.
14. Provide a variety of well-selected instructional materials and equipment, easily accessible for use by teachers and pupils and give encouragement and/or administrative support for the effective use of these materials (Lewis, 1961, pp. 16-17).

Media Specialist

The various media-specialists usually work in the center or are assigned to various buildings or satellite centers. They should function in the following manner prescribed by ALA/NEA. The media-specialist implements the media program by:

Serving as instructional resource consultants and materials specialists to teachers and students
Selecting materials for the media center and its program
Making all materials easily accessible to students and teachers
Assisting teachers, students, and technicians to produce materials which supplement those available through other channels
Working with teachers in curriculum planning
Working with teachers to design instructional experiences
Teaching the effective use of media to members of the faculty
Assuming responsibility for providing instruction in the use of the media center and its resources that is correlated with the curriculum and that is educationally sound. Although most of this instruction will be done with individual students in the media center, some can be presented by teachers and media specialists in the center or in the classroom, with the size of the group to be instructed determined by teaching and learning needs.
Assisting children and young people to develop competency in listening, viewing, and reading skills
Helping students to develop good study habits, to acquire independence in learning, and to gain skill in the techniques of inquiry and critical evaluation
Guiding students to develop desirable reading, viewing, and listening patterns, attitudes, and appreciations
Providing teachers with pertinent information regarding students' progress, problems, and achievements, as observed in the media center
Acting as resource persons in the classrooms when requested by the teachers
Serving on teaching teams. The activities of the media specialist include acting as a resource consultant for teachers, designing media and working directly with the students in their selection and evaluation of materials and in their research and other learn-activities. Where the size of the media staff permits, the media specialist would be a full-time member of the teaching team
Making available to the faculty, through the resources of the professional collection, information about recent developments in curricular subject areas and in the general field of education.
Supplying information to teachers on available inservice workshops and courses, professional meetings, and educational resources of the community (Standards for Instructional Media, pp. 8-9).

Clerical Personnel (Technical and Para-professionals)

The clerical personnel form supportive services and help in the smooth running of the center. They help in typing, checking the material in and out, correspondence, and general office routine work.

Summary

In this chapter an attempt is made to identify and locate the experiences of developed countries in developing a plan and program for Learning Resource Centers as a tool to help some of their educational problems. They can be summarized as:

1. Mass media and technology have acted as catalytic agents in the process of change in the field of education.
2. The professionals in the field are slow in developing a point of view or position.
3. Today's classrooms are becoming more complex and are under a great pressure to change.
4. The classroom teacher cannot do the job alone.
5. Education is a creative process and should attempt to develop various desirable skills in pupils through the interaction of pupils, teachers, and curriculum.
6. Learning Resource Centers play a vital role in this entire process and in educating for quality education.
7. Learning Resource Centers bear different names, but the main purpose is the organizing and providing leadership for making instructional materials available for individual student growth.
8. The availability of a variety of materials gives the student and teacher a wide range of choice from which to select the one best suited for the purpose.

9. The philosophy of a Learning Resource Center is one of "service" to student and teacher.
10. The Learning Resource Center can centralize the location of procurement and control of instructional media such that maximum use of the materials without unnecessary duplication can be achieved.
11. School centers, District centers and Regional centers are established to facilitate the use of instructional resources.
12. The Learning Resource Center is used for various purposes, depending upon the needs and imagination of students and teachers.
13. The Learning Resource Center provides a variety of services to students and teachers.
14. To provide adequate service the Learning Resource Center should be properly staffed, organized and managed, so that it can provide leadership in the field.
15. Functions and qualifications of the Learning Resource Center personnel should be clearly defined to be more effective and efficient.

We have so far discussed basic facts about Zambia in Chapter II. Relevant literature was reviewed in Chapter III. In this chapter the experience, organization and management of the Learning Resource Centers in developed countries are discussed. In the chapter that follows, a plan and program, organization and management of Learning Resource Center for Zambia will be discussed. The model develops out of the materials enumerated in Chapter II, III, and IV.

CHAPTER V

Recommendations Regarding Plan and Program of Proposed Model Learning Resource Center

In Chapter II we discussed some background information regarding Zambia. In Chapter IV we discussed the plan and program of Learning Resource Centers in developed countries. In this chapter we shall discuss the plan and program of a Learning Resource Center in Zambia. This will include the philosophy and purpose of the Learning Resource Center, the organizational pattern, the personnel needed to carry out the plan, their qualifications, suggestions regarding the physical needs, special requirements of the Center, and the time line of events.

Below are the recommendations that have grown out of the analysis of data in previous chapters. Each recommendation will be discussed at length in the pages that follow:

1. An effective organizational structure should be created at the national level.
2. A provincial level implementing body be established.
3. A school level committee be created as the "actual users" level body.
4. A national level Learning Resource Center should be established.
5. Physical facilities adequate for the programs of the National Learning Resource Center should be constructed.
6. Provincial level Learning Resource Centers should be established.
7. School Media Centers should be established.

8. Proposed time line.

A developing country has many basic needs in various fields, such as agriculture, education, health, economy, production, industry, etc. In this chapter, attention will be focused on education. In every developing country the needs for educational information, school curricula, more and qualified teachers are fundamental to the growth process. At one level students need simple, direct, applicable materials to improve quality of their output. At still other level, teachers require a different range of material. School principals have information needs to be satisfied. As John Sewell puts it,

> To install, initiate, encourage, train, teach and transfer information in a country with limited means and talents is one of the major problem areas, slowing down and hindering LDC (Less Developed Country) expectations.
>
> Information which shapes our future holds high regard for instructions to all levels--from "how to build a compost pit" to mathematics involved for the development of a nuclear reactor.
>
> "Information" is an all embracing term. One of its specifics, and one of the most importance to the development process is "Instruction." This word implies a communication between a teacher and a learner, and it involves an extremely wide range of objectives. For the teacher may be an individual, a profession, an institution or whatever; and the "learner" is an expandable term which may be a farmer, a mechanic, a surgeon, a flight engineer--anyone who has to study lessons and techniques to be able to be conversant with or capable of performing his calling, his trade or his profession; or to fit him into society about him through educative process (Sewell, 1972, p. 18).

Education for a developing country, therefore, is a basic need. It helps the process of development. Zambia, as we have discussed in Chapter II, is a developing country, facing an acute shortage of qualified teachers to teach its ever increasing student population. It is struggling to improve the process of education so that children learn better in a shorter period. It is trying to develop its own curriculum and experienc-

ing shortage of books and other software. As John Sewell also stated:

> But in the LDCs (Less Developed Country), formal teaching, if existent at all, evolves from a difficult and painful struggle and is heavily weighted in the private sector. First, the shortage of school facilities, the shortage of school teachers, the lack of school books, blackboards, writing material, maps, globes, charts --these have to be built, trained, garnered, produced in situations where available funds for such purposes must vie with priorities in other areas. Yet, experience has proved over and over again that once a glint of light is sighted through the door of knowledge, an overpowering thirst for education ensues, and the door somehow is made to open wider (Sewell, 1972, p. 18).

The door has been widened in Zambia and the glint of light is sighted, as a result of President Kenneth Kaunda's assurances to his people.

> All our people are going to be given equal opportunities to train for various jobs and then they will be able to compete on merit (Phiri, 1964, p. 5).

After independence, the government attempted to mobilize all resources at its command and all the possible outside resources it could muster to achieve this goal. A mention of this was made earlier, in Chapter II. The main idea was to maximize the opportunities of Zambian youth to be exposed to various experiences and be prepared to accept responsible positions which were at the time being occupied by expatriates. Dr. Kaunda made this clear in his statement:

> We have started on providing these opportunities both as a party and as government. With the advent of self government these will be increased so that none of our people can complain about the opportunities not being available (Phiri, 1964, p. 5).

The President was specific when he thought of the above mentioned problems and programs. From Dr. Kaunda's Speeches and Writings, Richard Hall presented this brief extract:

> With a rapidly increasing population we have a very high proportion of young people and when we think about the general welfare and improvement of the country, we are thinking mainly of the younger age group (Hall, 1965, p. 81).

With the advent of independence in Zambia, as discussed in Chapter II, primary emphasis is put on education, the younger age group, and their needs. The investigator is attempting to suggest the establishment of an institution--the Learning Resource Center, which can facilitate the process of educating the younger age group. This institution, once established, can also help the process of education in other demanding fields of the country, such as health, agriculture, industry, social education, etc.

As discussed earlier in "Trends and Problems," p. 36, and Tables 1-8 in Chapter II, Zambia has some specific problems in the field of education. These are: growing student population, dearth of qualified teachers, scarcity of suitable instructional material, need for professional and para-professionals to man the various stages of education process, etc. Keeping these in view, the following philosophic base for a Learning Resource Center is generated.

Why a Learning Resource Center for Zambia? A Proposed Philosophic Base

In Chapter III, while reviewing literature in the field, some guideline principles were identified. In Chapter IV, while discussing the experience of developed countries in the implementation of programs of Learning Resource Centers, some more guidance regarding philosophy, purpose, plan and program was available. Based on these pieces of information and guidance, the following proposed philosophic base for a Learning Resource Center for Zambia is developed.

To facilitate communication of ideas:

Education is a creative process, designed to develop desirable intellectual, physical, and social skills. The needs of the youth of independent Zambia have changed. They not only need to learn skills of read-

ing, computation, observing, listening and social interaction, but also to develop a spirit of inquiry, self-motivation, self-discipline and self-evaluation. They should be able to communicate ideas with their fellow Zambians. A Learning Resource Center can help achieve this.

To provide quality education:

Properly designed instruction, continuously selected and evaluated media facilities, software and hardware can shape the learning environment and help nationalize it. This can be facilitated through establishing a Learning Resource Center. This center, through the use of modern technology, can provide quality education in the school systems it services. Various researchers in the field of instructional technology have proved beyond doubt that carefully planned use of the technology facilitates the learning process

> Given a reasonably favorable situation, a pupil will learn, from any medium--television, radio, programmed instruction, films, filmstrips, tape recordings, or others. This has been demonstrated by hundreds of experiments (Schramm, et al., 1967).

To reduce the cost of quality education:

Quality education is expensive, but nothing is more costly than waste of human resources. Poorly educated students represent a loss of potential talents for a nation. The Learning Resource Center can help make maximum use of existing resources to bring the cost of quality education down.

To individualize instruction:

Students learn and progress at their own pace. No two are the same. In traditional teaching, these facts, even though known, cannot adequately be taken into consideration. If the new teacher is prepared to handle dif-

ferent instructional techniques and material, a broader range of learner's individual differences can be accommodated. In addition, greater interest in learning can be developed. The Learning Resource Center can help the practicing teacher to master various instructional strategies and develop their competencies to handle various multi-media instructional material and equipment in a way that will benefit his learners. He can really become the manager of learning, by making available many materials in a variety of formats to suit the specific, individual needs of the learner.

To update instructors:

The Learning Resource Center is a service in the cause of education. It can provide new ideas, can keep educators abreast of new developments, can support and supplement allied educational services.

To produce instructional material:

The Learning Resource Center can guide, help and produce new instructional material suited to the specific needs of the learners. The new instructional material so produced can reflect the life and culture of Zambia. It can be more effective because it has been developed out of the felt needs of the educational process.

To evaluate and validate instructional material:

The Learning Resource Center can evaluate, redesign and produce relevant and validated instructional materials for extended use.

To centralize the purchase of instructional materials:

The Learning Resource Center can create a system that can centralize the procurement and control of instructional material, so that they are readily available. This will make the process faster and more economical

as more pieces of software and hardware are brought at the same time.

To maintain the instructional materials:

The Learning Resource Center can also maintain these materials so as to extend their useful life while keeping them in continuous use and providing considerable economic benefit.

While assuming leadership in the field of instruction, the Learning Resource Center in Zambia should also function as an integral part of the education process in general, and teacher education programs in particular, serving the pre-service and in-service teacher training needs of the country. Such a center can also help the community in health education, social education, agricultural education, industrial training, etc.

What a Learning Resource Center Can Do for Zambia? Functions

In an environmental context discussed earlier, what can a Learning Resource Center do for the education of the young in Zambia? As stated in Chapter II, the number of school-going population is increasing. Enrollment in schools is always on the increase. In Chapter II, Chart I presented the projected enrollment for the country. With that projected enrollment through 1978, Tables 1 and 5 in Chapter II showed the projected need for teachers to teach that growing number of Zambian youth. We have shown in the above mentioned tables the number of Zambian teachers that must be added to resolve the situation. Even after the few teacher education projects going on at the moment, the country will not be self-sufficient in the near future, so far as the preparation of Zambian teachers are concerned.

For updating Zambian teacher: In-service training:

The Learning Resource Center can be of a great help in bringing

the Zambian teachers up-to-date regarding the newer material, hardware and software and the latest techniques tried out elsewhere in Zambia and/or in the world. It can also help them develop competencies and skills to handle problems developing in the classroom situation with ease, through the use of a multi-media or inter-media approaches. It can also bring to them various experiments tried out in other schools of Zambia and thus, can serve as an information dissemination and catalytic agency.

For pre-service training of teachers:

The Learning Resource Center can help in the pre-service training of teachers by exposing them to and equiping them with the latest instructional materials. It can develop in them a competency to handle individual differences in the classroom through mastering a multi-media approach to facilitate the use of various strategies in individual and group learning situations. The teacher will move into the field with an assurance that there is an organization to help keep him abreast of the latest developments in the field of education and to guide him in his specific needs of teaching a particular group of students. This will increase his confidence and thus ensure confident, better teaching.

For orienting untrained, new teachers:

This Learning Resource Center should also take the responsibility of developing new orientation programs for training of new teachers who are not trained and are going to face the classroom situation for the first time in their lives. This program should be geared toward orienting these new teachers in the classroom experience, giving them a feel of the classroom situation before they actually start teaching in the school. If the programs are functionally developed, the center can be a great

help in the acute and growing problem of preparing Zambian teachers for Zambia.

For facilitating instruction:

Not only in the training of teachers, but, with its resources and facilities, the center can be a great help in the instructional development in the country. This can be done by organizing courses and seminars in instructional development.

For curriculum development:

Curriculum development is another area where the center can have a positive influence. Its resources and staff can give specific guidance and suggestions in curriculum development. Zambia today is faced with that problem of developing curriculum suited to the country's specific needs and reflecting its own culture. The center can be of great help in that endeavor.

For centralizing the purchase of compatible instructional material:

In any country, where each educational institution is free to make its own purchases of software and hardware, it is very likely that institutions do not usually compare notes. The investigator has seen instances, even in developed countries, when two institutions of the same school district have bought two pieces of expensive equipment that are not compatible resulting in a program produced on one unit which could not be utilized on the other unit. This must be avoided, especially in developing countries where wastage of money cannot be tolerated. The center can also take care of the incompatibility by developing guidelines regarding the purchase of such equipment. Also, by the centralization of all purchases, the country

can acquire the best equipment at a very competitive price.

For better maintenance of instructional material:

The investigator has also seen in a developing country, various pieces of one type of equipment, but different makes and models. Consequently, the country had to maintain a very large inventory of spare parts. This made it difficult to maintain the equipment. As a result, many pieces of equipment, for which the country had spent hard earned foreign currency, were lying idle and no longer contributing to the educational development of the nation. Combs and Tiffin, in their study found:

> While working in Ghana the authors discovered that the biggest single problem affecting the utilization of educational television was the high rate at which receivers broke down. Two academic years after installation only two out of hundred receivers had survived without major breakdown (Combes & Tiffin, 1969, pp. 309-11).

For maximum utilization:

If the material and equipment are stored and maintained in one place, they will be easily accessible for maximum utilization. The country will be able to make optimum use of every Kwacha spent.

For evaluating and adapting instructional material:

This center with its expert resources can help evaluate new instructional materials and systems, equipment and programs, and consequently improve them. It can also acquire foreign materials and adapt them to suit local conditions and requirements.

For production of material suited to the needs and culture of the country:

One of the most important needs of a developing nation is that of instructional materials suited to its own cultural background, its own vocabulary and depicting instances from its own daily life. Since demand

for such material is generally small, commercial firms tend to produce those that can be used in more than one country. This material, however, creates the problems mentioned earlier; that is, they are inappropriate for the needs of a specific country or culture.

With the help of teachers of the country, the Learning Resource Center in Zambia could produce material that depicts Zambian background and its culture. Thus, it will be more suitable to the specific needs of the learner. Such material could be developed, tested, corrected and mass-produced at the center to serve the unique needs of the country.

For improvisation of instructional material:

Instructional material could be improvised or prototypes prepared, so that schools could use these material readily. Zambia could get more value for its expenditure by avoiding the penalties of foreign exchange. In addition, local talents could be utilized and maintained. Thus, the center could play a very important and vital role in making the country self-sufficient and independent in such crucial needs as well as save on foreign exchange. Materials produced at such a center could be graphics, projectables or done through various printing techniques such as silk-screen printing. Silk-screen printing is less expensive on small production and its ancillary demands are low.

For special care in storage and retrieval:

In the tropics a very important aspect is storing the equipment. Heat and humidity can play havoc on optics, electronic equipment, and other sensitive material like photographic paper and films, etc. Proper care in these special situations can go a long way in lengthening the life of materials and equipment and in saving the material. Over and above that,

the materials can be stored in the center in a way so that the needed materials are easily available. Persons specializing in storage and retrieval systems can be of great help in quick retrieval of the material. If the retrieval system is defective, the whole program can be ruined. Further, the center, with its experts in the field, can guide schools and other institutions regarding the care, storage and retrieval systems of instructional materials.

For the spread of new ideas:

Before a central organization, the center is in a better position to identify various new programs and experiments that have been tried out in schools of the country. Also, the center gets information regarding the latest ideas and developments in the field. The center, then, is best equipped to spread the new ideas. These new ideas can be disseminated in many ways:

1. One way is through a bulletin, published periodically bringing out new ideas, experiments tried out by teachers, latest information in the field, recent additions in the center and many other things.
2. The center can carry new ideas and models from one school to another through its mobile van and thus spread new ideas and facilitate change.
3. The center can also organize a visit of a group of teachers to other schools where new experiments and ideas have been tried out, thus breaking down initial hurdles to change.

For effective maintenance:

The center can also help facilitate the maximum utilization of instructional equipment by having a mobile maintenance unit which can tour all parts of the country to maintain and repair equipment, thus assuring

minimum breakdown and maximum utilization. This process can be greatly facilitated by ordering compatible equipment.

In summary, here are the purposes that a Learning Resource Center can serve, if properly initiated, staffed and organized:

- Updating Zambian teachers: In-service training of teachers
- Pre-service training of teachers
- Orienting untrained, new teachers
- Facilitating instruction
- Curriculum development
- Centralizing purchase of instructional material
- Better maintenance of instructional material
- Maximum utilization of instructional material
- Evaluating and adapting instructional material
- Production of material suited to specific needs of the country
- Improvisation of instructional material
- Special care, storage and retrieval of material
- Spread of new ideas
- Effective maintenance

Based on principles developed in Chapter III and the experiences of developed countries discussed in Chapter IV, basic philosophy for a Learning Resource Center in Zambia was discussed in the earlier part of this chapter. From that philosophy developed the purposes for the Learning Resource Center and now are discussed below the various recommendations that should be implemented to achieve the above mentioned purposes.

Recommendation 1. An Effective Organizational Structure Should Be Created (National Level)

Developing countries have given a high priority to education as an agent of change and hence, development. Most African governments, therefore, invest a relatively high proportion of their budgets in the development of human resources. But, there are some priorities:

> A crash program of university expansion can be effective only if the lower schools that feed into the universities are also expanded, the opposite approach, a gradual upgrading and broadening of the school system from the botton up implies a steady expansion in the number of qualified teachers and it would take some twenty years before it would produce top level scientists (The African Experience, p. 264).

Thus, developing countries recognize the importance of education and are prepared to spend for it also. But, the major problem for the continuity of progress remains in effective organization. As Dr. Baikie puts it:

> A discouraging aspect of media programmes in developing countries is that the life of most of them is usually short or not organized. In our enthusiasm to establish media programmes, we often forget to consider the important ingredient that would sustain the life of the programme without adequate initial planning. Among the pre-requisites for the success of the programme is good planning from the outset (Baikie, 1970, p. 8).

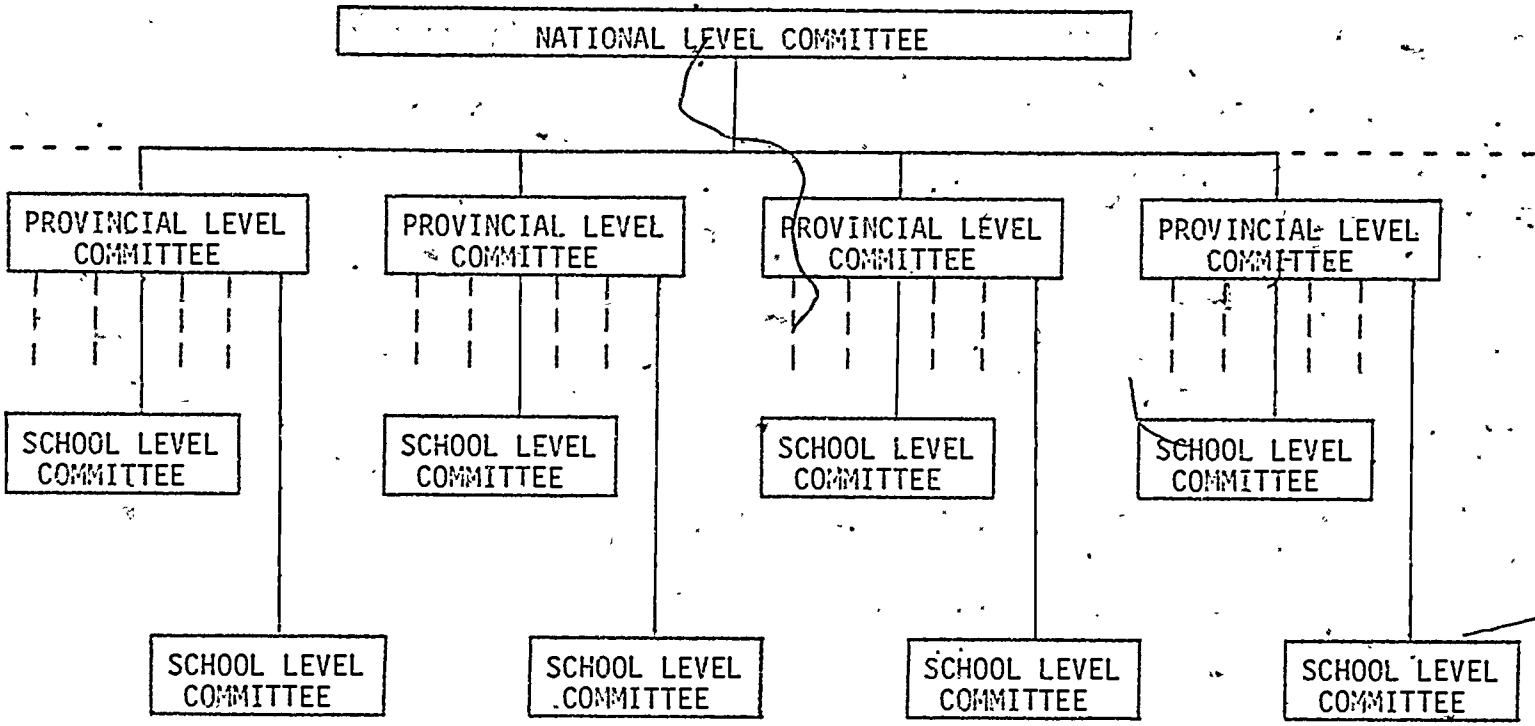
Media programs, to be successful in Zambia, will have to be properly established at three levels:

1. National level
2. Provincial level
3. School level

Chart 1 below shows the heirarchial structure of the media committees proposed to be set up in Zambia. The National Committee will mainly be a policy making and central coordinating body. The policy will be executed by the Provincial Committee, and the School Committee

Chart 1

Organizational Plan for a Media Program in a Developing Country (Zambia)



- - - - - indicates there are more committees at that level than are shown. At the Provincial level, the number of committees will be equal to the number of Provinces. At the School level, the number of committees will be equal to the number of schools in each province.

will be the grass root level implementary one.

While forming committees for these various levels of media programs, various factors should be kept in mind to make the committees more effective. Developing countries are more prone to the power structure and a consideration of this power structure might greatly facilitate the process (Chart 2). Dennis Pett has classified the following factors:

1. Authority factors--Those factors which authorize the establishment and development of the program.
2. Functional factors--Those factors relating to the client system and change agent that affected the personnel, space, equipment and administrative structure necessary to carry out the program.
3. Environmental factors--Those factors outside the client system -change agen structure relating to the general developmental environment (Pett, 1966).

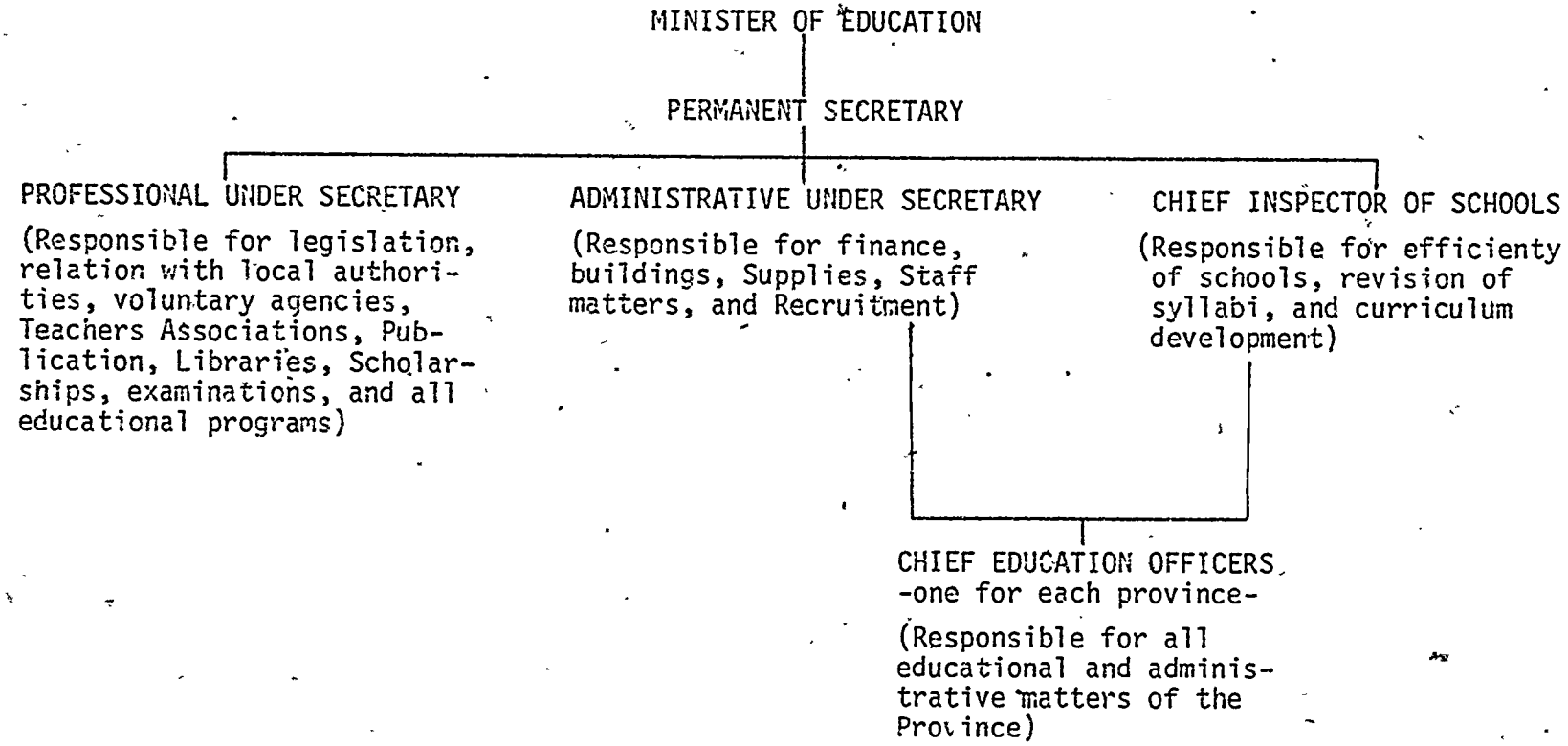
Any innovation to be accepted and to be able to take root has to look into the power structure of the system. Education, being a state subject, it will be useful to take a look at the administrative structure in Zambia. Under "Organization and Administration of Education" in Zambia in Chapter II, we discussed the administrative organization of education in the country. This is graphically represented in Chart 2.

Keeping the above factors in mind, the National level body may best be composed on the following influential functionaries:

1. Education Minister or his representative (Permanent Secretary, Ministry of Education)
2. President of University of Zambia or his representative
3. Chief Inspector of Schools
4. Director of Instructional Television Program
5. Directors of Provincial Media Centers
6. Dean, College of Education, University of Zambia

Chart 2

Zambian National Education Structure



7. Director of School Broadcast Program
8. Representative of Principals of Training Colleges
9. Presidents of Federations of various Subject Teachers' Associations
10. Director of the National Media Center

The Education Minister is the final authority in educational matters for the country. If he is on the committee, or is represented by some one he deputizes, e.g., Permanent Secretary, Ministry of Education, his presence will facilitate many official processes and will impart priority and worthwhileness to the program.

The President of the University of Zambia, or his representative, being in the process of education, knows the needs of the country. They can also be helpful in conducting research and provide efficient personnel for the media program.

The Chief Inspector of Schools is a person responsible for efficiency of schools, revision of syllabi, and curriculum development. His being on the committee will be very useful in bringing to the National Committee the media needs of the country.

Directors of Provincial Media Centers are the liason between the National level and the School levels. They have to execute the plan and program planned at the National Level, and they are in close contact with the schools. This will enable them to measure the effectiveness of the program and identify the needs of students, teachers, and schools. Also, they are in a better position to identify and locate local talents and experimentations carried out at the school and provincial levels.

The Dean of the College of Education is responsible for the preservice and in-service training of secondary school teachers. He knows the requirements, and he will be the person working in close cooperation

with the Learning Resource Center.

Principals of Primary and Secondary Teachers' Training Colleges, similarly, are responsible for the pre-service and in-service training of their teachers, and they will also have to work in close cooperation with the Learning Resource Center.

The director of the Instructional Television Programs will have some useful input in the planning of the Learning Resource Center, and the Learning Resource Center, when developed, might have something to offer to the Instructional Television Program.

Similarly, the Director of School Broadcast Programs will contribute some useful input and might reciprocatly benefit from the Learning Resource Center.

Presidents of federation of subject teachers' associations like the Science Teachers' Association, Social Studies Teachers' Association, etc., are the practitioners in the field, and they know the exact requirements, problems, etc., for media programs in their respective subject areas, and they will provide very important inputs and feedback.

The director of the National Learning Resource Center is the central figure. He is a person who is professionally competent in the field, and as such can help guide the planning and programs of the National Committee. He will be the person who can maintain continuity of action and thus should serve as the secretary to the National Committee.

This National body will be responsible to steer the entire media program of the whole country. This committee will:

- Develop the rationale for the media program for the country
- Identify the needs of the country and locate the resources
- Encourage maximum utilization of existing resources

- Acquire needed instructional material
- Plan effective and efficient use of the instructional material

While making such recommendations the committee will have before it the needs of the country; the specific requirements of the country; the amount of resources available to, and in, the country; the appropriateness of the existing material; and, their compatibility for use on existing equipment. The committee will be responsible to see that optimum use is made of the existing resources and that whatever money is spent, is spent judiciously. In short, this will be a policy making body for the entire instructional materials program of the nation. The office bearers of the committee being very busy persons, this committee might meet semi-annually or quarterly.

The National Committee might acquire extended consultation help from other national or international organizations at the initial planning stage and then occasional consultation to analyze and evaluate the ongoing programs.

Recommendation 2. A Provincial Level Implementing Body Be Established

Again, an influential committee at this level will be useful in executing the program as envisaged by the National Committee. At the same time this committee will be very crucial because this committee, being in close contact with the actual users of the media program, will have some very important and useful feedback for the National Committee. This feedback will help the National Committee adjust emphasis in various programs in the light of the feedback. This will affect national policy and programs by adjusting the programs to the changing needs of the clientele. Keeping the factors discussed earlier in view, this committee should be composed of the following people:

1. Chief Education Officer
2. President of Provincial Headmasters/ Principals Association
3. Presidents of Provincial Subject Teachers Association
4. Principals of the Teachers' Training Colleges in the Province
5. Provincial Learning Resource Center Directors

The Chief Education Officer of each Province is responsible to the Permanent Secretary, Ministry of Education for general control, both the administrative and financial of all education in his area, and is a Zambian.

The President of the Provincial Headmasters/Principals Association will give added strength to the media programs in the schools by his being involved in the program. This will facilitate the use of media by teachers.

Presidents of the Provincial Subject Teachers Associations will have useful input for the media program. Their involvement will bring a positive influence to the media programs in the schools.

Principals of Teacher Training Colleges in the Province are intimately involved in the pre-service and in-service teacher training and thus they will bring their input and be cooperatively involved in the provincial level committee.

The director of the Provincial Learning Resource Center will be a professionally competent person and will be able to report to this committee that which transpired at the national level. He will also act as secretary to this Provincial committee.

It will be the responsibility of this committee to see that all the requirements of the schools are met. New needs of the schools are looked into in advance and appropriate measures taken to see that the

schools get their materials when they are ready to use them. This committee will also be able to collect data on the usability, validity, appropriateness of the instructional material as they are tried out in the classroom situation. This information should be passed on to the national committee for making corresponding changes in the plans and programs, in the light of this field data. The Provincial committee, therefore, is a very important link (interface) between the policy making body (National Committee) and the actual user. This committee should meet more frequently, (once a month/quarter) to transact the business mentioned above, and be ready for the national committee.

This committee can also invite teachers who have some creative ideas, who have improvised a technique or material, or created an instructional prototype, to take this worthwhile information to the National Committee for their information and appropriate action. For example, appropriate action may require a prototype to be tried out in other provinces before going into production. The National Committee will have resources to facilitate this new idea from a teacher in one province to be tried out by other teachers in other provinces. The teacher should be given due credit, financial, professional, and/or moral, for his creative efforts. The center through the national steering committee can foster this exchange of new ideas. Also, such new ideas can be disseminated through a mobile van, which will camp at various schools and carry new ideas, new material, new equipment, etc., to those schools/areas.

Recommendation 3. A School Level Committee Be Created as the Actual Users Level Body

The school level is the actual user level. All that is done by the National and Provincial committees, the policy making body and the implementing boey is for the actual user in the school--the student and the teacher.

There should be a small committee in every school, the Media committee, comprising the following:

1. Principal of the school
2. Various subject/department heads
3. President of the student body
4. Media Coordinator of the school

The principal of the school will be the final authority for the school, and his inclusion on the committee will facilitate the media utilization process. In the case of financial problems, he will hopefully find a solution.

Various subject heads or department heads will be able to integrate the media in the educational program of their subjects or departments. They will also be able to bring back information regarding the effect of various media, their media needs, suggestions, etc., to this committee for transmission. These departmental heads will also bring to the committee various experiments, improvisations, prototypes, etc., tried out in their subject areas.

The president of the student body is an important member, as it is for the students that this whole program is being put forth. The president of student body will bring useful input from a different angle and view point, regarding the effect of various media, their appropriate-

ness, level of complexity, practicality, etc., to this committee and will work as a liason with the Provincial committee.

The Media Coordinator will outline the media program for the school in consultation with the actual users and send the requirements to the Provincial committee well in advance so that the school receives what is needed when needed. This committee should meet at least once a month. The media coordinator will see that the material and equipment is optimally used and properly maintained. In cases of major breakdown, the Media Coordinator will summon the Provincial center to rush help and/or substitution. The Media Coordinator is a teacher, who has been specially trained for this work at the National center and whose teaching work-load is reduced, so that he can take care of this additional responsibility. At the same time the school does not lose the services of a qualified and trained teacher. The Media Coordinator will either be trained specially for the purpose at the National center and given some training at the Provincial center, or before becoming a Media Coordinator, he could have been trained at the pre-service training stage where he could have been given some intensive work and experience.

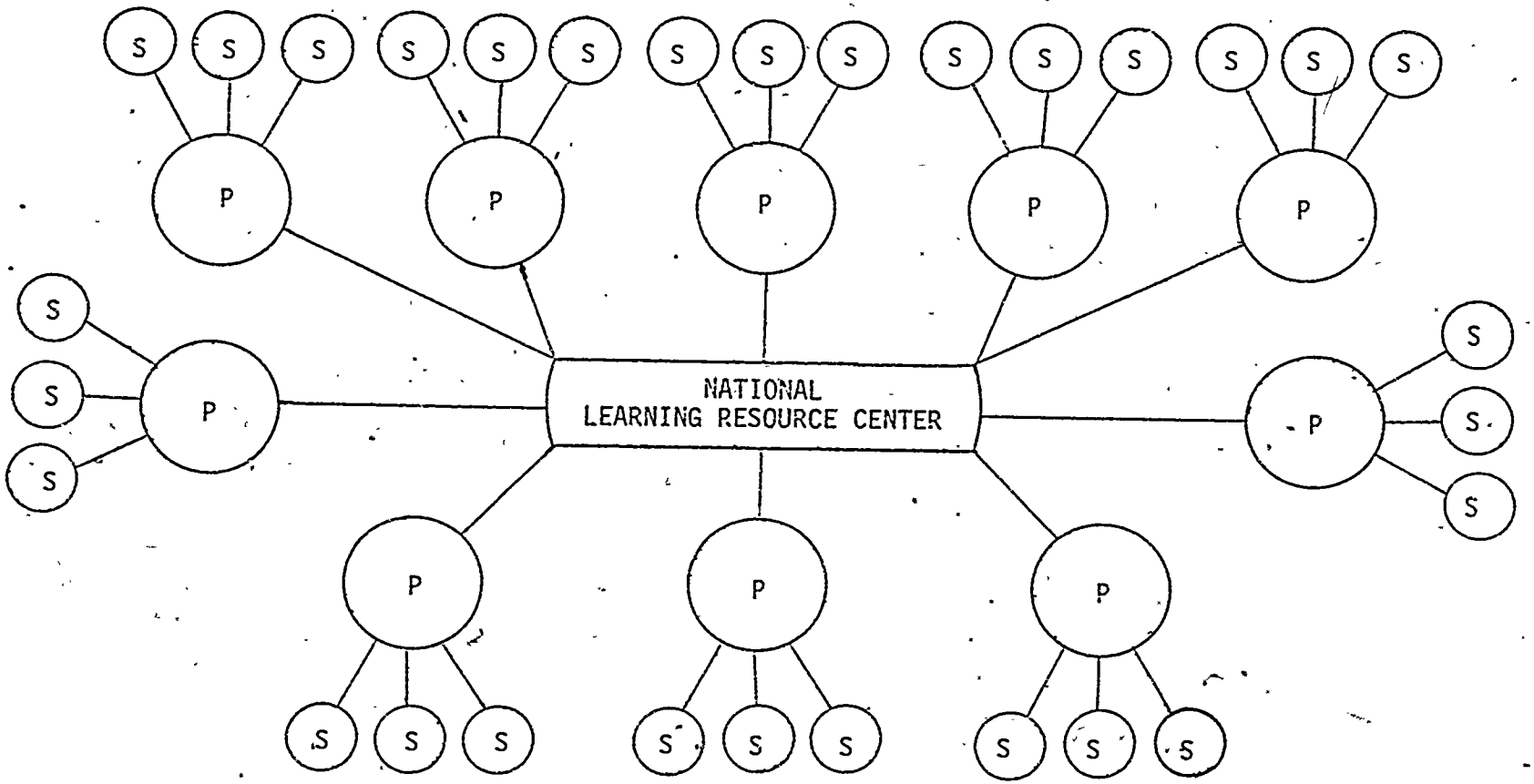
The Media Coordinator will also be able to train local school student and teachers in the use of equipment and material.

Recommendation 4. A National Level Learning Resource Center Should Be Established

In keeping with these three level committees, there will be a National Learning Resource Center, Provincial Learning Resource Centers and School Media Centers, as many as the number of schools in each province. The following chart schematically illustrates the set up.

Chart 3

Media Center Network



P -- Provincial Learning Resource Centers

S -- School Media Centers

What will the National Learning Resource Center do?

- The National Learning Resource Center will implement the policy made by the National Committee. This center will provide leadership in the field by preparing media leaders at the provincial and school level. It will also be actively involved in the pre-service and in-service training programs of the country. In this respect the center will maintain a close liason with the College of Education, University of Zambia, and other teacher training institutions of the country. Since part of the teacher preparation work will be done at this center, the center will be involved in training existing teachers as well as future teachers.
- The center will select equipment and material for the country so that the country gets the instructional materials that it needs, and materials that are valid, usable and compatible. A central purchasing agency will make the purchase economical, material compatible, available at the time most needed, optimally used, avoid unnecessary duplication. This center will also keep the requisite supply of spare-parts so that the equipment is repaired and maintained for maximun use.
- The center will be a learning ground for students and teachers. They will come to learn production techniques for various instructional materials, display techniques, group and individual student teaching techniques as well as operation and maintenance techniques for various pieces of equipment. Self instructional laboratories, production and utilization laboratories established at this center will help develop various competencies in the teachers and students in using multi-media.
- The center will also have a full fledged production program for instructional material. Creative ideas from teachers after due tryouts

and suggestions and modifications will be mass produced for distribution in various schools of the nation. This can include graphics made through the silk-screen process (as it is cheaper for lesser number of copies), maps, overhead transparencies, slides, audio and video tapes, models and other prototype materials.

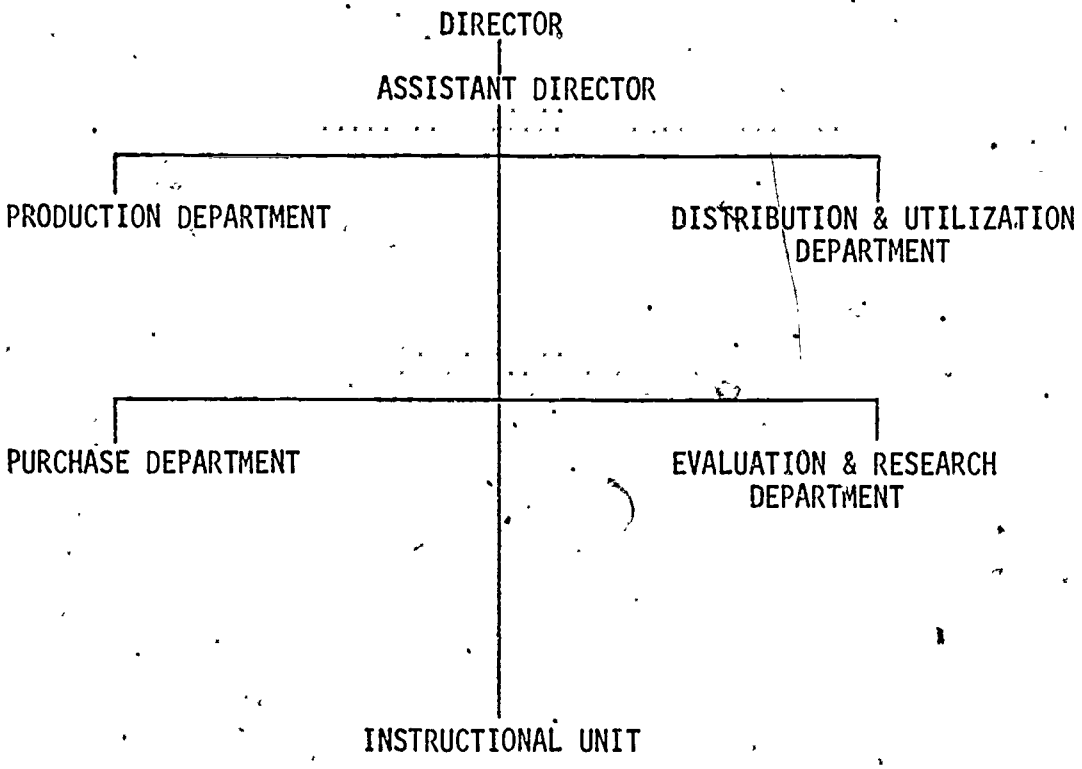
- At this center, new material and equipment will be previewed, tested, adopted or adapted before going into the schools of the country. It is here that new films and filmstrips will be screened and evaluated.
- The center will house a well stocked library of films, filmstrips, slides, audio and video tapes, cassettes, recordings and other material.
- The center will also maintain a mobile van. This van will be a multi-purpose van. It will be used to replenish the supply of instructional material of the various provincial centers, and to repair and maintain equipment such as projectors, tape recorders, television and radio sets.
- This van will also be useful in bringing new ideas, new concepts, new materials and new equipments to the provincial centers. They can also arrange demonstration and thus popularize the experiments and improvisations, innovations and prototype materials developed by the teachers of Zambia.

What Will the Staff Requirements of the National Center Be?

We have discussed the various functions the National Learning Resource Center can fulfill. Based on these functions the following staff requirements are recommended. Chart 4 presents an organizational structure for the various departments within the center.

Chart 4

National Learning Resource Center



These various departments will have to be staffed by competent people to take charge of the affairs of the department and give direction to its programs. Chart 5 gives the further breakdown of these departments and the various categories of personnel.

Qualifications and Job Descriptions of Major Administrative/Supervisory Personnel

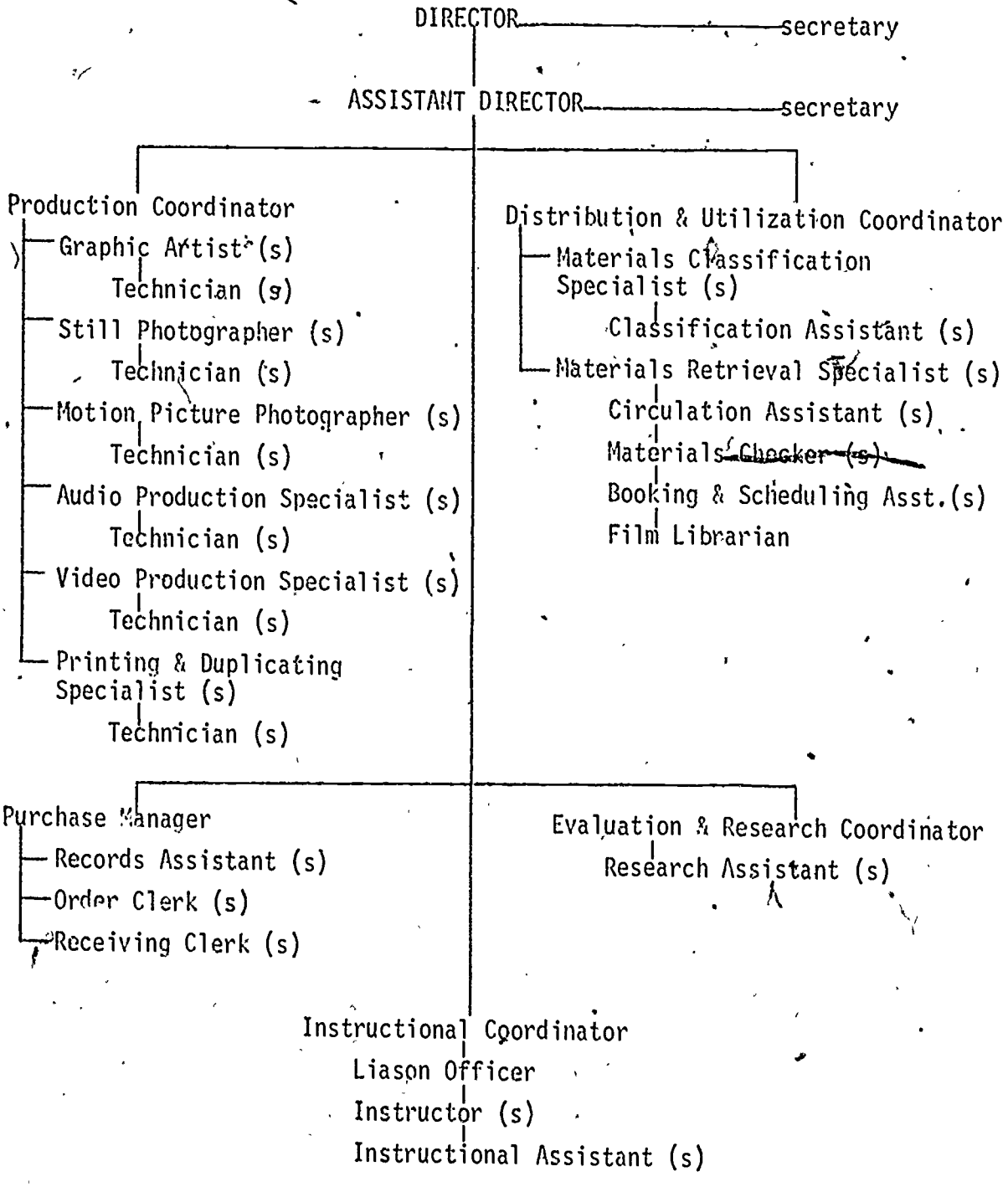
We shall now discuss the job descriptions and qualifications for the main office holders for the National Learning Resource Center:

National Director

The National Director is the chief architect of this program. He/She

Chart 5

National Learning Resource Center
-Personnel-



should have a very broad educational background and experience in the field of instructional technology, and not merely in the audio-visual field. He/She should have considerable experience in curriculum development, a high degree of administrative ability, program development ability and demonstrated leadership in implementing educational programs. He/She should be creative and should have a lot of initiative and drive. Accordingly he/she should:

- Be able to carry out policies as established by the National Committee.
- Should serve as adviser to the National Committee and be able to guide the National Committee to the future needs of the nation.
- Should screen and recommend staff for the National center as well as the Provincial center Directors for appointment.
- Should supervise the staff of the National center and the Provincial Director and evaluate them.
- Should provide leadership in the development of short and long term planning for the center as well as maximize media utilization programs for the country.
- Should prepare reports for the National committee.
- Should make recommendations as to procedures for in-service and pre-service teacher education.
- Should make recommendations for acquisition of material and equipment for the whole country.
- Work in close cooperation with the College of Education staff for more effective use of multi-media in teacher preparation programs.
- Be responsible for coorcinating all efforts and resources of the center in the planning and producing of instructional materials.
- Guide the various components in the planning of media requirements

including investigation, evaluation and selection of appropriate media.

- Give administrative direction and leadership to the center and its various services.
- Assume responsibility for developing an inter-departmental centralized program and services utilization of instructional material and equipment.
- Assume principle responsibility for building strong relevant collections of educational media and media equipment closely related to curricular requirements of the country and goals set up by the National Committee.

Qualifications

The Learning Resource Director:

- Must possess minimum a Masters degree preferably in Instructional Technology or A.V. Education.
- Must have training and experience, preferably in African countries, which will enable him to fulfill his function effectively.
- Should have at least five years teaching experience at the Primary and/or Secondary and college level.
- Should have good administrative experience of managing media centers.
- Should have been involved in proper utilization and evaluation of instructional materials.
- Should be conversant with various instructional materials production techniques.
- Should have a background in the fundamentals of curriculum development.

If the country is not able to find a suitable Zambian candidate for this position, a request should be made to some other foreign or international agency to spare the services of a person, based on the job

description and qualifications mentioned above. This action should be taken with the intention of training a local person while the foreign expert is in the country.

Assistant Director

For the position of assistant director, similar or slightly lower qualifications may be expected. Complimentary qualifications would be a great help. A Zambian should be selected for the position and be given enough first hand experience with the foreign or international expert. When the foreign or international expert leaves the country after the duration of his contract, the Zambian assistant director can take over the responsibility.

Production Coordinator

The production coordinator is a liason officer between the various production experts lide the graphic artist, photographer, printer, etc., and their crew on one side and the director on the other. As such he/she must:

- Be responsible for coordinating efforts of all centers in the planning and producing print and non-print media.
- Assist the various center components in planning media requirements, including investigation, evaluation, and selection of appropriate media.
- Be well-versed in various media production techniques.
- Be able to guide and inspire people working with him.
- Determine whether to produce in-house or utilize outside vendors for a particular production.
- Develop specifications, estimate production costs, evaluate vendor bids, monitor sub-contractor technical efforts and perform technical accep-

tance of procured services.

- Recommend and select required Audio-Visual production equipment additions.
- Be responsible for the production of prototype curriculum aid materials.
- Reports to the Director

Qualifications

- Have a good theoretical background and practical training and/or experience in production techniques.
- Must have at least a Bachelors degree in fine arts and/or art education and five years experience in production.
- Should have administrative experience of budgeting, acquisitioning, etc..
- Should have five to ten years experience in the development and production of instructional material as well as utilization of outside vendors.
- Should have experience in planning, organizing, implementing and evaluating media learning systems analysis and design techniques.
- Thorough knowledge of media production techniques.

The Dissemination and Utilization Coordinator is a person who ensures efficient storage and retrieval systems. His is the extension arm of the center and accordingly he must:

- Be well versed in the classification of print and non-print material.
- Be able to store the print and non-print material so that retrieval is efficient and storage is done keeping in view the special climatic conditions of the country.
- Be able to schedule the use of material.
- Plan maximum utilization of the material and equipment.

- Be able to supervise mechanics, so that equipment is properly and quickly repaired and maintained.
- See that enough inventory for spare parts is maintained.
- Report to the Director.

Qualifications

- Must be a Library Science graduate
- Must have five to ten years experience of managing a media center
- Should have administrative esperience of budgeting, requisitioning, planning, etc.

Purchase Manager

The purchase manager is responsible for the purchases of the center as well as those of the outer centers in the country. As such

- He should work in close cooperation with the Evaluation and Research Coordinator.
- He should be well versed and up-to-date regarding the latest instructional materials in the field.
- He should know the exact requirements of the nation and see that those needs are satisfied in time.
- He should be in a position to arrange for demonstration of new equipment and material for the benefit of concerned people.
- He should be able to plan, organize and implement the plans of purchase.

Qualifications

- He must be a graduate of business school.
- He should haye five to ten years experience of requisitioning, purchasing, inventory making, etc.

- He should have administrative experience in planning, budgeting, scheduling, etc.

Evaluation and Research Coordinator

The evaluation and research coordinator is another vital person for the center. He is the person who will evaluate the instructional material and help the purchase manager in making wise purchases. He will also evaluate the programs of the center and help his colleagues in making necessary changes in programs of their department and the center as a whole. He will also try out experimental programs, improvisations and prototypes made by the teachers and recommend for their mass production at the national center. For all these, he should

- See that the various instructional material and equipment being used or to be used in the center and the country are properly evaluated before being introduced in the educational system of the country.
- He should work in close cooperation with the purchase manager, so that approved materials are bought for the nation.
- He should arrange for the research and development of instructional material.
- He should field-test the instructional material produced by the teachers -before being mass-produced.
- He reports to the Director.

Qualifications

- Must have a Masters degree in educational evaluation and reserach.
- Must have a five to ten year experience in evaluation and research of instructional material.

Instructional Coordinator

The instructional coordinator is the educational wing of the center. His job will be to

- Plan and execute the educational programs of the center.
- In consultation with the College of Education, University of Zambia, and other Secondary Teacher Training Colleges, plan and execute the pre-service and in-service training programs for secondary school teachers.
- In consultation with the Primary teachers training colleges, plan and execute training programs for primary school teachers.
- In consultation with the Distribution and Utilization Coordinator, plan utilization of the instructional material.
- Report to the Director.

Qualifications

- At least a Masters degree in instructional technology.
- About five to ten years experience in planning and executing teacher training programs.
- About five years administrative experience in planning, budgeting, scheduling, etc.

The above mentioned seven positions are crucial in a sense that they are departmental heads and much of the activities and programs of the department will greatly depend on their ability to plan, execute and provide leadership to the entire program. Though mentioned separately, these seven people will have to work in close cooperation to make the entire program of the center a great success.

Other positions mentioned in Chart 5 are for professionals and

para-professionals specialized in their own special field. Their job descriptions are not provided here. It should be a general policy to hire Zambian nationals as far as possible. In the absence of a qualified Zambian, a foreign help, preferably from international organizations, should be sought and promising local counterparts be trained. This way, in a few years (about five) the country will be self-sufficient so far as the personnel for the center is concerned.

Recommendation 5. Physical Facilities Adequate for the Programs of the National Learning Resource Center Should Be Constructed

Various educational aspects of the National Learning Resource Center, like the philosophy, purpose, activities, personnel, etc., have been discussed. For all these educational activities, there should be a provision for proper space. This brings us straight into the realm of a proper building where all the activities and programs of the center can be carried out efficiently. But, before one is suggested, a few aspects should be defined. As Alan Green has suggested,

> When a building program is first being considered the policy makers must define present and potential uses for media in terms of the educational program, the character of the institution, the talent and development of the staff, the type of financial support, the existing institutions throughout the region and the interests and motivation of taxpayers, alumni, and other influential groups (Green, 1969, p. 33).

This sort of thinking is necessary, otherwise one ends up in riding a bandwagon. Len Singer has cautioned

> I think frequently we design facilities to accommodate the hardware. In visiting colleges and universities in various parts of the country, I see an unfortunate rush to get on the bandwagon and build facilities and buy TV projectors and install student response systems because its the thing to do, even though they don't utilize them effectively or at all. We are building the spaces to accommocate the hardware rather than the students

The needs of any educational program can be grouped into three types of uses according to G. Kent Steward.

> Treatment of information about spaces under special consideration may be grouped into three major areas. These are, instructional use, including all distinct subjects or levels of instruction such as vocational, Kindergarten, science, fine arts, etc.; general use, including administrative, learning resources, library, guidance, and other areas; and, service use, including custodial, food service; transportation, and possibly maintenance or supply storage facilities.
>
> An activity space, whether it is instructional, general or service in nature, should be treated. Each identifiable activity space should be studied to determine the following factors:
> 1. Objectives
> 2. Activity to be housed
> 3. Persons to be accommodated
> 4. Space requirements
> 5. Spatial relationships
> 6. Equipment to be housed
> 7. Special environmental treatment (Steward, 1969, p. 49).

When G. Kent Steward wrote about the above mentioned factors and types of uses, he had the school system in mind. These categories and factors might also help us in making our thinking more specific. Again, as Sumption and Landes have asked (though again in the case of school system), the following questions can keep us on the right track

> The philosophy of the school system is determined by the responses to two questions: (1) What are the legitimate purposes of the school in the community, and (2) Whom shall the school serve? (Sumption & Landes, 1957).

These questions we can direct as well to the Learning Resource Center. The answers we get from these questions might be useful in planning the building for the Learning Resource Center. Carlton Erickson has tried to expand the above two questions further in getting us closer to defining our needs.

> In view of the thinking of educational theorists and planners, technological experts, and teachers, it will be helpful to restate the questions with media environments in sharper focus, as follows:

1. What kinds of learning spaces should we have and how should we equip them with media facilities if we desire to arrange conditions so that pupils can learn effectively by themselves a given portion of essential content.
2. What kinds of learning spaces and media facilities must be provided when pupils are organized to learn not only from their own teacher, but from others with teaching roles to play.
3. What kinds of learning spaces and media use facilities do we need for those educational objectives that we predict demand direct and personal guidance of pupil activity as well as pupil-to-pupil communication?
4. What kinds of special service do teachers and pupils urgently need effectively in direct and indirect instructional roles?

These questions imply the need for an unmistakable flexibility in a variety of learning spaces, each of which may require in a new and vital way, adequate provision for media utilization (Erickson, 1968, p. 177).

The terms used in these questions like "teachers" and "pupils" may be taken in general sense rather than the specific school sense, as the center will be more directly involved in the teacher preparation program. It is necessary to get answers to all the above mentioned questions before going on in full steam with the building construction program. A special committee of educators, planners and administrators appointed by the National Committee should first meet and try to find out the specific needs of the Center, the space requirements and other special requirements regarding utilities, special services like climatic control, etc., and the type of furniture required. Instead of ordering complete furniture from a foreign country, one piece of each furniture should be ordered. Those pieces of furniture should be studied regarding the special needs and climatic conditions of the country and then produced locally using improvisations and local material and talent. This will reduce the cost considerably and help local talent. There will be a considerable savings in time, as well.

The Committee should then meet with the architect and explain to

him the various specific requirements. The architect will them make some preliminary plans and sketches for the Committee. The Committee will discuss the plans and sketches thoroughly and then the architect will go back to the drawing board and implement the changes in the light of discussion. This process might continue as long as need be. If this is not done properly we might possibly end up in a situation Len Singer cautioned us against. The architect should be properly and adequately briefed regarding the special needs and programs. Alan Green has suggestions regarding the points we as educators should make clear to the architect so that he can make his building plans to suit specific requirements,

> The building program should give the architect all basic necessary information about the building he is to design. It should first include:
> -A clear statement of the instruction's educational philosophy and significance of the proposed building in the light of these goals and objectives.
> -A more definitive statement of the purpose of the building and its role in the district, the campus or the community.
> -A brief description of the functions that will be going on in the building, particularly if they deviate from more historic functions.
>
> From this base it can become more specific:
> -A schedule of every desired space in the building defining the types of users, number of users, functions to be housed, required square footages, necessary furniture, required equipment, and other supporting functions. All special requirements of which the architect should be aware, should be included.
> - A description of how each of the spaces will relate to each other and to the building as a whole.
> -Analysis of how the building functions as a whole. This includes information about access, circulation, and overall servicing needs (Green, 1969, p. 37).

Thus, the task of constructing a building might apparently look very simple, but to create a building that will take care of the various educational activities of that institution is difficult. It is more difficult to construct a building which can also envisage the future needs

and growth of the institution, or a change in the mephasis of activities. In this case the building should not only take care of the pres . t activities but also cater to the needs of future purposes and growth. So the concepts of flexibility and adaptability should be kept in mind while constructing the building. Alan Green has put this in the following words:

> It is not difficult to realize why the task of developing a building program is so difficult that it is often by-passed or left to arbitrary or non-committal decisions. Its development requires many decisions, decisions which go to the very heart of the educational institution. . . .
>
> These are not simple "yes" and "no" decisions that can easily be made. Many hours of debate, many shades of opinion, and some calculated guesswork will enter into all these decisions, decisions that will become the basis for specific requirements spelled out in the program (Green, 1969, p. 33).

Keeping the above discussion in view, an attempt is made to sketch the building needs for the national center. The investigator does not attempt to give a blueprint of what the building should look like, but will try to suggest what various units will go to make the building, and what the special requirements of each unit and its relation to other units are. The final decision regarding the building will rest with the appropriate authorities of the Government of Zambia, the educators of Zambia, the architect and other related departments and persons. The Regional School Building Center for Africa in Khartoum, Sudan, will have some very important and useful inputs in the matter of building construction.

To satisfy the needs of the program mentioned above, the building for the National Learning Resource Center should be adequately equipped to carry out the present program, as well as its future needs. With that in mind, the building construction should also take into considera-

tion future extensions to the existing building, and the architect should keep this point in view while suggesting a plan.

Office Space

Adequate space will be needed for the personnel mentioned above earlier, who are going to work at the national center. This will include the Director, the Assistant Director, other departmental heads and the various professionals and para-professionals. Office space, secretarial space and space for support services will be needed. It is suggested that 4,675 square feet of space should be provided for this purpose. A further breakdown of this space is provided later in this chapter.

Auditorium

A good auditorium (where instructional material can be previewed) is a necessity for the center. The concept of this auditorium can be that of a flexible auditorium type, where, depending upon the audience, the auditorium can be enlarged or reduced in area. Here the trainees will be able to preview a film in small numbers or a teacher can use it for his class of 50 to 100 students. A good, air-conditioned auditorium is an important feature of the center. A floor space of about 2,500 square feet is suggested for the auditorium.

Film Library

Attached to the auditorium, or very near it, should be located the film library, which will house the films, filmstrips, slides, tapes, etc. This place should have an efficient humidity and temperature control. This type of special arrangement will help in extending the life of these software. Enough space should be provided to store these software and

adequate facilities should be provided to store them. About 1,000 square feet of space should be provided for the library.

Photographic Studio and Dark-rooms.

The center will rely heavily on slides and photographs. So, enough space should be provided for a photographic studios, at least two of them. In one the trainees will be able to work and the other will be used for the production program of the center.

Enough small dark-rooms should be provided (six) where the trainees can work and at least two large ones where the production program of the center can go on without any disturbance. An estimated floor space of about 1,300 square feet should be provided for this unit.

This unit should be air-conditioned for better standards in production and for the storage of sensitized materials like the films and photographic papers.

Exhibition Space

The building should be designed so that the hallways and other free space can be developed as exhibition spaces. Productions and publications of the center, new ideas, concepts, materials, and equipment can be displayed here. This space can be utilized for exhibiting work of the trainees also and thus can serve as source of casual learning for the visitor. Walls in the hallways will have to be specially designed for this.

Workshop

Workshops will have heavy machinery and equipment so they should preferably be located in the basement or on the first floor. Separate

workshops should be provided for woodword, metal work and electrical and electronic work. The trainees will get their basic lessons in these trades. At the same time some improvisations and prototype materials can be produced here. Depending upon the development of production programs, the workshop facilities should be extended. About 5,400 square feet of floor space should be provided for the workshops. A further breakdown is provided latter in this chapter.

Repair and Maintenance Shop

Space should be provided near the workshops for the repair of equipment and its maintenance. These two services can be complimentary, so the proximity will be useful so far as provision of utilities are concerned. About 1,200 square feet of space should be provided for the repair shop. The repair shop will need more high voltage current so provision for that should be made.

Graphic Production Studio

A large space should be provided for the graphic production studio. Here the trainees can work and develop their competencies as well as use the production program of the center for graphics. The space may be divided, using folding partitions, so that in the case of need, large or small groups can work without disturbing one another. About 1,300 square feet of floor space should be provided for the studio.

Sound Recording Studio

A sound recording studio should be provided so that professional level audio work can be done at the center. At the same time, enough space should be set aside for the trainees to work. This studio should

be sound proof and air-conditioned in accordance with the universal standards. The studio should be carpeted, should have drapes and walls should be made of echo-proof material. About 1,300 square feet of space should be provided for the studio.

TV Production Studio

A TV production studio is necessary, but, depending upon the availability of the TV production unit already functioning in Zambia, that space and studio might be utilized, and duplication might be avoided. If the resources of the existing TV unit are limited or are such as cannot be spared for the trainees, a studio similar to the photographic studio should be instituted. This studio would have to be air-conditioned and made sound proof. Heavy lighting would have to be provided in the studio. The equipment in the studio should be compatible to that in the existing TV production unit.

Duplicating and Printing Press

Programs of the center will rely very heavily on duplicating and printing. New instructional materials will be developed and many copies will be needed for use in all the schools of Zambia. Provision should be made for quick duplicating and printing as well as offset printing of charts, maps, etc. Enough space should be provided for this work, and packing and storing of raw and finished materials. About 1,300 square feet of floor space should be provided for this.

Classrooms

This center is going to be involved in the in-service and pre-service training of teachers and workers in the field. Enough classroom

space, where classes, seminars and workshops can be conducted, will have to be provided. For the classrooms 2,220 square feet of space should be provided.

These are some of the main space allocations with the type of work in which they will be involved. Space should be provided for work, storage of material and equipment.

According to Basil Castaldi (1969), the various square footage for the above mentioned spaces is suggested to be:

Office Space		
Director	250 sq. ft.	
Asst. Director	200 sq. ft.	
5 Department Heads @ 175 sq. ft.	875 sq. ft.	
12 Media Specialist & similar categories @ 125 sq. ft.	1550 sq. ft.	
11 Technicians & similar categories @ 100 sq. ft.	1100 sq. ft.	
7 Secretaries @ 100 sq. ft.	700 sq. ft.	
		4675 sq. ft.
Auditorium		
For 350 persons @ 7-8 sq. ft.		2500 sq. ft.
Film Library		1800 sq. ft.
Workshops		
Woodword for 20	1600+200 storage	
Metalwork for 20	1600+200 storage	
Electrical work	1600+200 storage	
		5400 sq. ft.
Repair & Maintenance Shop	1000+200 storage	1200 sq. ft.

Studios		
Graphic Studio for 20	1100+200 storage	
Sound Recording for 20	1100+200 storage	
Photographic Studio for 20	1100+200 storage	
TV Studio for 20	1100+200 storage	
Duplicating & Printing Press	1100+200 storage	
		6500 sq. ft.

Darkrooms		
2 large @ 300	600 sq. ft.	
6 small @ 100	600 sq. ft.	
		1200 sq. ft.

Classrooms		
2 Seminar rooms for 15 @ 450 sq. ft.	900 sq. ft.	
2 Small Lecture rooms for 30 @ 660 sq. ft.	1320 sq. ft.	
		2220 sq. ft.

All figures mentioned here are suggestive. They can be changed or readjusted according to the special needs of the center.

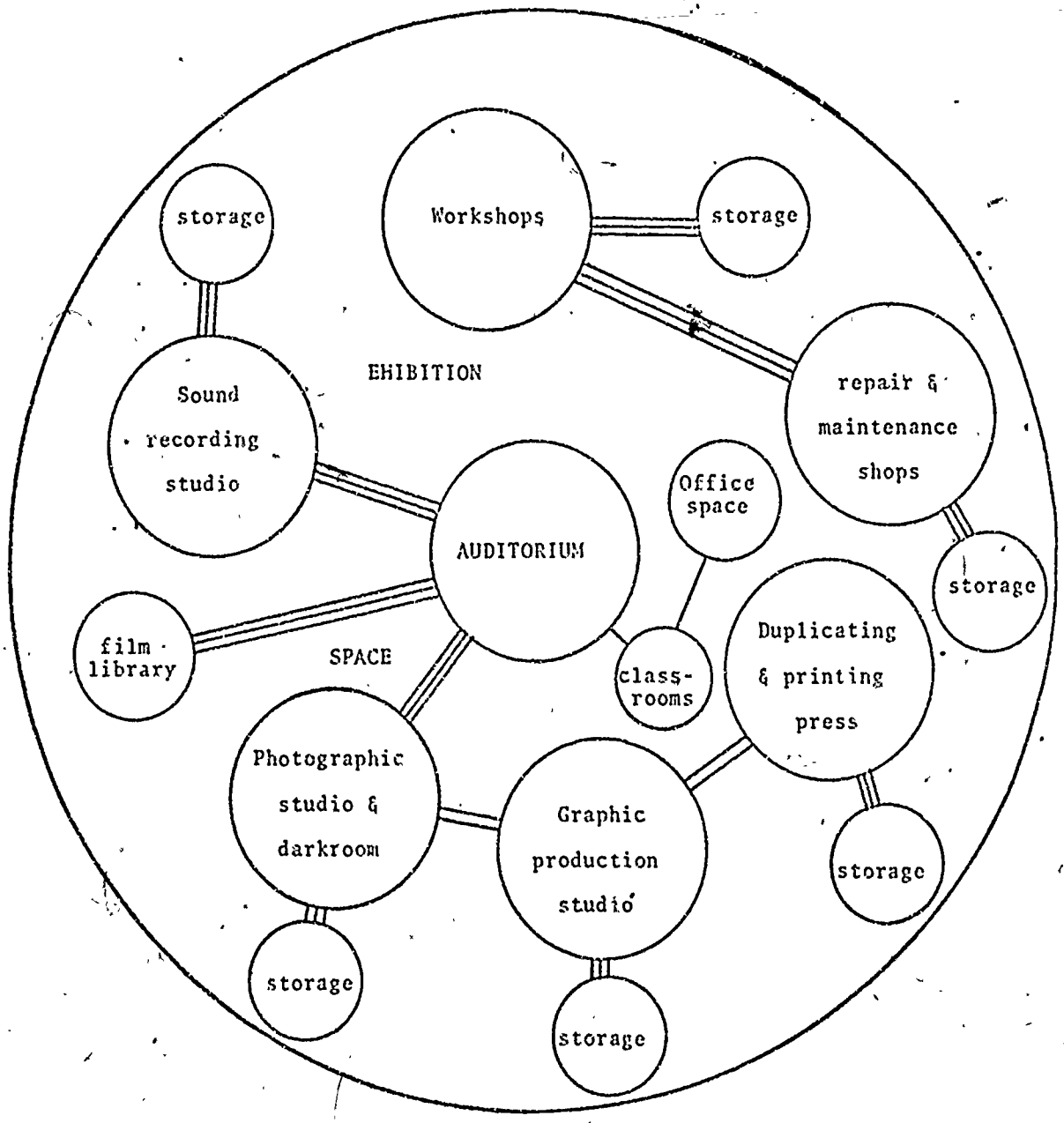
Chart 7 gives a schematic plan layout of the various spaces mentioned earlier, with their relative spatial arrangement.

Recommendation 6. Provincial Level Learning Resource Centers Should Be Established

The Provincial Center will concentrate on working at the provincial level. It will be similar to the national center, but on a small scale. This center will be more involved in in-service rather than pre-

Chart 6

SCHEMATIC BUILDING PLAN LAY-OUT FOR THE NATIONAL CENTER



service training of teachers. The production program of the center will be limited to a few copies for try-out purposes. The library will stock fewer films, filmstrips, slides, audio and video tapes and cassettes, as they will be continually replenished from the national center.

This center will maintain a close look at the utilization of media in schools, try to solve the difficulties encountered by individual teachers and make the media utilization process as smooth as possible.

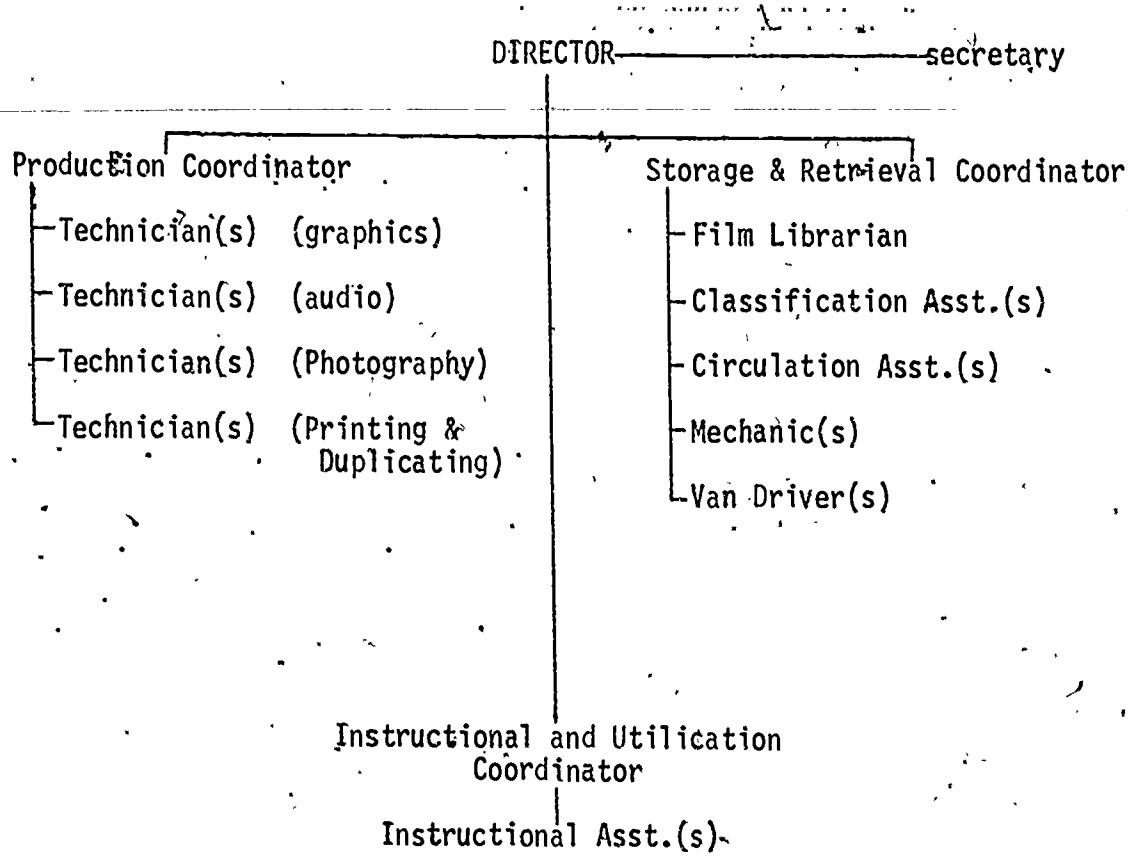
A mobile van similar to the national one, will keep the supply of instructional material moving and equipment in running condition.

Administrative Structure

The administrative pattern suggested for the provincial center is as follows:

1. Provincial Learning Resource Center Director
2. Production Coordinator
3. Storage and Retrieval Coordinator
4. Instructional and Utilization Coordinator
5. Technician(s)
6. Mechanic(s)
7. Van Driver(s)
8. Secretary(s)

Provincial Learning Resource Center



Provincial Director

At the provincial level, the Director is in charge of all the schools and training colleges in the province. His job description and qualifications will be very similar to those of the Assistant Director of the national center. A Zambian should be selected for this position, preferably a resident of the province.

Production Coordinator

Production Coordinator selected for the provincial center should be able to:

- coordinate planning and production of print and non-print media at the provinvial center.

- Provide assistance and guidance to teachers in the production of instructional material at the center and their respective schools.
- Assist the national center in planning and executing the in-service training programs and workshops for teachers
- Assign and coordinate work of the technicians
- Report to the Provincial Director

Qualifications

- Minimum Bachelors degree in educational media
- Knowledge and experience in production of instructional material in various media
- Be able to provide guidance and leadership
- About five years experience in teaching at primary, secondary or college level

Storage and Retrieval Coordinator

Storage and retrieval coordinator will ensure that all instructional material in the provincial center is properly cataloged, classified and stored for efficient retrieval. Storing being a problem in a tropical climate the coordinator will ensure that enough precautions are taken to keep the material well protected. He must

- Be well versed in the classification of print and non-print material
- Be able to store the various print and non-print material efficiently
- Be able to schedule the use of material so as to use the material to a maximum extent
- Be able to supervise maintenance of the material
- See that enough inventory of spare parts is maintained
- Report to the Director

Qualifications

- Must be a Library Science graduate with emphasis on multi-media experience
- Must have about five years experience of managing a media center
- Should have administrative experience of budgeting, requisitioning, planning, scheduling, etc.

Instructional and Utilization Coordinator

The instructional and utilization coordinator is the educational component of the center. His job will be to

- Plan and execute educational programs of the center
- In consultation with the principals of schools and training colleges in the province plan and execute pre-service and in-service training programs for teachers
- Introduce and train teachers and instructors of the province in the proper use of new instructional material
- Report to the Director

Qualifications

- A Masters degree in Instructional Technology
- About five years experience in planning and executing teacher training programs
- Administrative experience in planning, scheduling, budgeting, etc.

Technicians, film librarian, classification assistants, circulation assistants, mechanics, instructional assistants, have very specific jobs and should be qualified and experienced to do the job.

Recommendation 7. School Media Centers Should Be Established

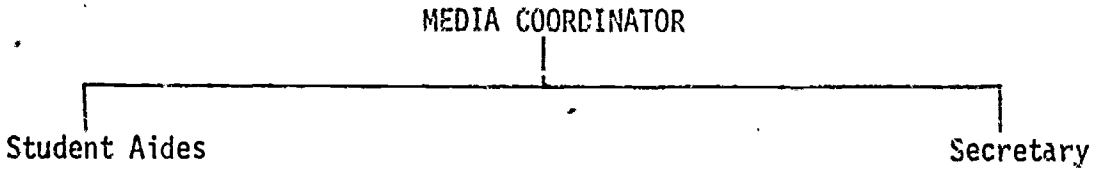
The school center will be mainly a supply center for the needs of that particular school, and its job will be to see that the instructional needs of the school are adequately satisfied and instructional materials are properly utilized.

The school center will keep a close look at and maintain a record of the use, difficulties, achievements with the material and keep the provincial and national centers informed so that in the future this experience is noted and future purchases might be made more wisely. At the same time, this center will keep the other two centers informed about the creative ideas and achievements of their students and teachers. These ideas can then be tried out at the national level and if found worthwhile, may be mass produced at the national center.

In case of a need, this center will borrow training material for organizing an in-service program for its own teachers. This center will also organize demonstrations of the new materials and equipment for its own teachers.

Chart 6

School Media Center



Personnel

At the school center level we need a part-time media coordinator who is first a trained and qualified teacher. He has been given a lightened teaching load so that he can help his colleagues in satisfying their media needs. He is trained to conduct training courses for teachers and students in the school.

To help him in his correspondence he is assisted by a secretary. Some student aides will also lessen his burden.

The media coordinator is essentially a teacher who had good pre-service or in-service training in the use of and maintenance of various instructional material and equipment. He coordinates the use of instructional material in the school and sees that every teacher receives needed instructional material and equipment at the proper time. He maintains a liason with the provincial center and expedites requisitions from there to his school.

Recommendation 8. Proposed Time Line

The investigator has tried to develop a time line of events which put the events in a sequence (see Chart 8). The second activity should not be attempted before the first is achieved, or the fourteenth should not occur before the thirteenth, and so on.

Time Line of Events

- Before anything can proceed, the Government of Zambia must commit itself to the establishment of a Learning Resource Center complex.
- By the end of the First year of that decision, it is necessary to:
  1. Establish National and Provincial Committees
  2. Appoint the National Director

Chart 9

Diagramatic Time Line

EVENTS	At the end of the 1st year	At the end of the 2nd year	At the end of the 3rd year	At the end of the 4th year	At the end of the 5th year
1st Event					
2nd Event					
3rd Event					
4th Event					
5th Event					
6th Event					
7th Event					
8th Event					
9th Event					
10th Event					
11th Event					
12th Event					
13th Event					
14th Event					
15th Event					

3. Discuss plans for the building of the National Center

- By the end of the Second year, it is necessary to:

4. Construct the National Center
5. Select the sites for Provincial Centers
6. Requisition equipment and material
7. Train Provincial Directors
8. Select counterparts

-By the end of the Third year, major tasks include:

9. Appointment of the National and Provincial lev , departmental level staff
10. Outlining of the program of the National and Provincial Centers
11. Training of School Media Coordinators

- By the end of the Fourth year

12. All the three level centers start functioning

- By the end of the Fifth year, it is necessary to:

13. Evaluate the programs of various centers
14. Restructure the programs at all levels in the light of the evaluation
15. Replace outside specialists with their Zambian counterparts

In summary, in the preceeding pages we have tried to identify a problem faced by Zambia in its struggle to educate its masses. In doing so we have looked back at Zambia's struggle for becoming self-sufficient in the supply of Zambian teachers to teach in its ever growing schools.

An available solution to this problem was offered not only to make the country self-sufficient in the number of teachers but also to be efficient, effective and economical in the production and use of "instructional material" to improve the quality of education.

A detailed plan and program for a model Learning Resource Center included the philosophy, functions, organization, personnel and their qualifications, a build plan and a suggested time line of events.

This plan, while designed for Zambia, may be adopted with necessary changes to the needs of any developing country.

APPENDIX

united nations educational, scientific and cultural organization
organisation des nations unies pour l'éducation, la science et la culture

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référence :

17 December; 1971

Dear Dean Childs,

Please excuse the delay in replying to your letter of 27 October. Unfortunately I was on a long mission for Unesco and have just got through the pending correspondence which had piled up during my absence.

With reference to your question about Mr. J.J. Patel's outline for his dissertation, here are my comments :

1. The Organisation, and particularly the Department of School and Higher Education is greatly interested in studies such as proposed by Mr Patel i.e. "Learning Resource Centers in Developing Countries". We believe that in developing countries this is one of the weakest activities, and is needed to bring about social and economic development.

2. Insofar as the parameters for this study are concerned, I believe it would be useful if the focus was kept on a single country, taking into account the long term development plan for overall development. It seems to me that such a study should be aimed at fostering the type of applied research activities which would generate innovation and change.

3. Unfortunately I see no way by which Unesco could finance Mr. Patel's visit to a country for securing first-hand information. On the other hand, once the country has been decided upon, I believe that sufficient recent documentation could be made available to him for carrying out his work. (Do not forget that he has had considerable experience in Ghana, and he may like to choose that country).

4. Regrettably, up to now, Unesco has done very little in assisting countries to establish resource centers. This was the main reason I suggested that Mr Patel attempt to help create a model which might be useful in at least in a specific region of the world. On a limited scale we are attempting to develop such centers in several of our new Teacher Education projects, such as the English-speaking Caribbean, the School of Education, University of Zambia, the School of Education, University of Nairobi

.../....

As soon as Mr. Patel's proposal for the Dissertation is ready, I should appreciate receiving a copy and will be pleased to comment upon it.

Yours sincerely,

G. Crank
Acting Chief
Teacher Education Section

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BIBLIOGRAPHY

Adams, Don, and Biork, Robert. Education in Developing Areas. New York: David McKay Co., Inc., 1969.

American Library Association and National Education Association. Standards for School Media Programs. Chicago: American Library Association and National Education Association, Washington, 1970, p. 4.

Arensberg, Conrad, and Nichoff, Arthur. Introducing Social Change. Chicago: Aldine Publishing Co., 1969.

Baiki, D.A. " Planning an Educational Media Service in a Developing Country." Overseas Visual Aids Center Journal, Bulletin 22, October, 1970, p. 8.

Beeby, C.E. The Quality of Education in Developing Countries. Cambridge, Massachusetts: Harvard University Press, 1966.

Block, Clifford H. "The Agency for International Development and Educational Technology in the Developing Countries." (Draft). Washington, D.C., Information Center on Instructional Technology, 1972.

Brown, James, Norberg, Kenneth, and Srygle, Sara. Administering Educational Media. New York: McGraw Hill Book Company, 1965.

Brown, Robert. "The Learning Center." Department of Educational Media, School of Education, State University of New York at Albany, 1967, p. 6.

Castaldi, Basil. Creative Planning of Educational Facilities. Chicago: Rand McNally Company, 1969.

Chadwick, Clifton, and Morgan, Robert. "Educational Technology Assistance for Developing Countries." Educational Technology, September, 1971, pp. 49-53.

Church, John. Administration of Instructional Materials Organizations: Analysis and Evaluative Criteria for Materials Centers. Belmont, California: Fearon Publishers, 1970, p. 1.

Coombes, Peter and Tiffin, John. "Problems in Educational Television, No. 1 Receiver Reliability." Educational Television International, Vol. III, No. 4, December, 1969, pp. 309-11.

Conference of Ministers of National Education of the French-speaking Afro-Malagasy Countries, (Liberville, 5-10 February 1968). Reports. Pan's, Andecam, 1968, 2 vols.

Council for Cultural Cooperation. -The Contribution of Audio-Visual Media to Teacher Training. Strasborg: Council of Europe, 1965.

Council of Educational Facility Planners. Guide for Planning Educational Facilities. Columbus, Ohio, September, 1969.

Department of State, Republic of Zambia. Background Notes. Washington, D.C.: U.S. Government Printing Office, 1970.

Educational Facilities Laboratories. Instructional Hardware/A Guide to Architectural Requirements. New York: Educational Facilities Laboratories, 1970.

Elliott, William Y. Education and Training in the Developing Countries. New York: Frederick A. Praeger Publications, 1966.

Encyclopedia of Education. Crowell Collier Educational Corporation, 1971.

Erickson, Carlton. Administering Instructional Media Programs. New York: The MacMillan Company, 1968, p. 22.

Faber, M. Zambia-The Moulding of a Nation. London: Africa Bureau, 1968.

Finn, James. "Automation and Education: III, Technology and the Instructional Process." Audio Visual Communication Review, Vol. 8, No. 1, Winter, 1960, p. 8.

Gerletti, Robert. "What Is a Media Center?" AV Instruction, September, 1969, Vol. 4, No. 7. pp. 21-23.

Great Britain Central Office of Information, Reference Division. Zambia. New York: British Information Service, 1964.

Green, Alan, ed. Educational Facilities with New Media. Washington, Department of AV Instruction: National Education Association, 1969, p. 35.

Hall, Richard. Kaunda: Founder of Zambia. London: Longmans Green and Co., Ltd., 1965.

Heimann, Paul. "Film, Radio and Television as Educational Forces in Modern Civilization," (Chapter 1). Developments in Audiovisual Education: Some Recent Articles. Pan's, UNESCO, 1963, pp. 8-9.

Herman, Jerry. "The Instructional Service Center: A New Concept." Instructional Materials Centers, Minneapolis: Burgess Publishing Company, 1971, p. 2.

Houghton, Harold and Treglar, Peter. Community Schools in Developing Countries. Hamburg: UNESCO Institute for Education, 1969.

International Council for Educational Media. Comparative Study on the Administration of Audio-Visual Services in Advanced and Developing Countries. Paris: UNESCO, 1969, p. 59.

Isenberg, Benjamin. "The School and Resource Centers." AV Instruction, May, 1969, Vol. 14.

Janos, Dusz. Comparative Study on the Administration of Audio-Visual Services in Advanced and Developing Countries, Part 2: The Audio-Visual Services in Socialist Countries. The Hague: International Council for Educational Media, 1972.

Jones, Wilbur. "The Practices, Duties and Responsibilities of the Audio-Visual Director in Selected School Systems of the North Central Association" (unpublished doctoral dissertation, The University of Oklahoma, 1963).

Kaplan, I., ed. Area Handbook for Zambia. Washington: U.S. Government Printing Office, 1969.

Lewis, Philip. "The Role of the Education Communications Specialist." American School Board Journal, Vol. 142, No. 143, December, 1961, pp. 16-17.

Lindeman, Leroy R. Administrator. Instructional Media Division, Utah State Board of Education, Salt Lake City, Utah, 1965.

Long, N. Social Change and the Individual. Manchester: University of Manchester, 1968.

Michigan Department of Education. Policies and Criteria for Regional Educational Media Centers. Detroit, Michigan, State Board of Education, 1971.

National Education Association. "Audio-Visual Education is Urban School Districts, 1953-54." Research Bulletin, Vol. 33, No. 3, October, 1955, p. 100.

Nichoff, Arthur, ed. A Casebook of Social Change. Chicago: Aldine Publishing Company, 1967.

Noel, Francis. "Principles of Administering Audio-Visual Programs." Audio-Visual Materials of Instruction, Forty-eighth Yearbook of National Society for the Study of Education, Part I (Chicago: University of Chicago Press, 1949), p. 194.

deOliveira, Homero F. New Technologies and Education in Brazil. Brazil Human Resources Office-U.S.A.I.D., 1971.

Oregon Audio-Visual Association. Recommended Minimum Standards for Instructional Materials Programs in Oregon Public Schools. Prepared by members of the Oregon Audio-Visual Association, May, 1952, p. 23. (mimeographed).

Paden, John, and Soja, Edward. The African Experience - Volume I. Evanston: Northwestern University Press, 1970, p. 264.

Paden, John and Soja, Edward. The African Experience - Volume II. Evanston: Northwestern University Press, 1970, p. 188.

Patel, J.J. Position of Audio-Visual Aids in the Teaching of Biological Sciences in Schools of Ghana. (A Study). Capecoast: University College of Capecoast, 1967.

Pennsylvania Learning Resources Association. Guidelines for Instructional Media Services, Revised Edition, Pennsylvania, 1970, p. 48.

Pett, Dennis. "Factors Affecting the Institutionalization of the U.S.A.I.D." Indiana Univeristy Communications Media Project in Nigeria, (unpublished thesis, 1966.

Rake, Alan, ed. Africa 71. New York. African Publishing Corporation, 1970.

Report on Project Results: Conclusions and Recommendations, Training of Secondary School Teachers at the University of Zambia (ZAM 4). Zambia, October, 1971, p. 11.

Schramm, Wilbur, and Roberts, Donald F. The Process and Effects of Mass Communication, Revised Edition. Chicago: University of Illinois Press, 1971.

Sewell, John K. "Establishing a Communications Complex in a Developing Nation: Factors for Consideration." (Draft). U.S.A.I.D., February, 1972, p. 18.

Steward, G. Kent. Guide for Planning Educational Facilities. Columbus, Ohio: Council of Educational Facilities Planners, September, 1969, p. 49.

Sumption, Merle R. and Landes, Jack L. Planning Functional School Buildings. New York: Harper Brothers, 1957.

Taylor, Kenneth. "Creative Inquiry and the School Instructional Materials Center." AV Instruction, Vol. 14, No. 7, Sept., 1969, pp. 52-57.

Trow, William Clark. "In Teacher and Technology: New Designs for Learning." Learning Resources at Northern. AV Instruction, Vol. 14, No. 8, October, 1969, pp. 86-88.

UNESCO. Educational Planning: A World Survey of Problems and Prospects. Paris UNESCO, 1970.

UNESCO. Final Report, Conference of African States on the Development of Education in Africa. Addis Ababa: United Nations Economic Commission for Africa, 1961.

UNESCO. International Yearbook of Education, Vol. XXXI, 1969. Geneva: International Bureau of Education, 1970.

UNESCO. Mass Media in the Developing Countries: Reports and Papers on Mass Communication, N 33. Paris: UNESCO, 1962, p. 16.

UNESCO. Practical Guide To In-Service Teacher Training in Africa: Establishment, Execution and Control of Training Programmes. Paris, 1970.

UNESCO. Regional Centre for Educational Information and Research in Africa, Science Education Survey Report, 1965 (Revised). Accra: UNESCO Regional Centre for Educational Information and Research in Africa, 1967, p. 4.

UNESCO. Report on Conference on Higher Education in Africa. Tananarive (Madagascar), 1962.

UNESCO. Republic of Zambia Training of Secondary School Teachers at the University of Zambia: Report of the Review Mission. Paris: April, 1970. ED/SLL/2475/2705, p. 11.

UNESCO. Training of Secondary School Teachers at the University of Zambia (ZAM 4): Report on Project Results, Conclusions and Recommendations. Paris: October, 1971, p. 10.

UNESCO. UNESCO in Africa. Paris: United Nations Educational Scientific and Cultural Organization, 1969.

Urban, Fred. "The City Wide Instructional Materials Center." AV Instruction, Vol. 14, No. 5, May, 1969.

U.S. Agency for International Development. "U.S. Economic Aid to Africa, 1950-64." Africa Report, December, 1964, pp. 8-12.

U.S. Agency for International Development (Proposed Fiscal Year 1972 Program). U.S. Foreign Aid in Africa. Washington, D.C., A.I.D., 1972.

U.S. Agency for International Development. "Introduction to Program Presentation to the Congress: Proposed FY 1971 Program." Washington, D.C., U.S.A.I.D., 1971

Van Brink, I.A. Educational Television-Brazil. Paris: UNESCO, 1970.

Wastenberg, Milton, and Gerhard, Muriel. "The Underlying Education Process." AV Instruction, Vol. 16, No. 5, May, 1969, p. 17.

Willen, Phiri. Zambia in Future: Answers by Dr. Kenneth Kaunda. Cairo: United National Independence Representative in Cairo, 1964.

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Using Graphic Aids in Classroom, 1964
Supplementary Activities in General Science, 1964
How To Use Bulletinboards in School, 1964
A New Approach to the Teaching of General Science, 1963
Teachers Source Book of Audio Visual Aids, 1959.