SOMALIA

ENHANCEMENT OF SCHOOL QUALITY IN SOMALIA

August 1985

IEES

Improving the
Efficiency of
Educational
Systems

The Florida State University
Howard University
Institute for International Research
State University of New York at Albany

United States Agency for International Development
Bureau for Science and Technology
Office of Education
Contract No. DPE-5823-C-00-4013-00

Improving the Efficiency of Educational Systems (IEES) is an initiative funded in 1984 by the Agency for International Development (AID), Bureau for Science and Technology, Office of Education. The principal goals of the IEES project are to help developing countries improve the performance of their educational systems and strengthen their capabilities for educational planning, management, and research. To achieve these goals, a consortium of U.S. institutions has been formed to work collaboratively with selected host governments and USAID Missions for ten years. The consortium consists of The Florida State University (prime contractor), Howard University, the Institute for International Research, and the State University of New York at Albany.

There are seven countries working with the IEES initiative to improve educational efficiency: Botswana, Haiti, Indonesia, Liberia, Nepal, Somalia, and Yemen Arab Republic.

Documents published by IEES are produced to promote improved educational practice, planning, and research within these countries. All publications generated by project activities are held in the IEES Educational Efficiency Clearinghouse at The Florida State University. Requests for project documents should be addressed to:

IEES
Educational Efficiency Clearinghouse
Learning Systems Institute
204 Dodd Hall
The Florida State University
Tallahassee, Florida 32306
USA
(904) 644-5442

Agency for International Development
Bureau for Science and Technology
Office of Education
Contract No. DPE-5823-C-00-4013-00
Project No. 936-5823

SOMALIA

ENHANCEMENT OF SCHOOL QUALITY IN SOMALIA

August 1985

IEES

Improving the
Efficiency of
Educational
Systems

The Florida State University
Howard University
Institute for International Research
State University of New York at Albany

United States Agency for International Development
Bureau for Science and Technology
Office of Education
Contract No. DPE-5823-C-00-4013-00

SOMALIA QUALITY ENHANCEMENT STUDY

For the Government of the Somali Democratic Republic

Ministry of Education

Hussein Mohammed Said, Director General, Education Development

Ali Hassan Gaal, Director, Planning Division

Hassan Dahir Obsiye, Director, Curriculum Development Center

Improving the Efficiency of Educational Systems Project

Jerry L. Messec, Team Leader

Frances Kemmerer

Sivasailam Thiagarajan

Mark Berger, IEES Resident Technical Advisor

TABLE OF CONTENTS

4.0 IMPROVING THE QUALITY OF INSTRUCTIONAL MATERIALS

5.0 SUMMARY AND CONCLUSIONS

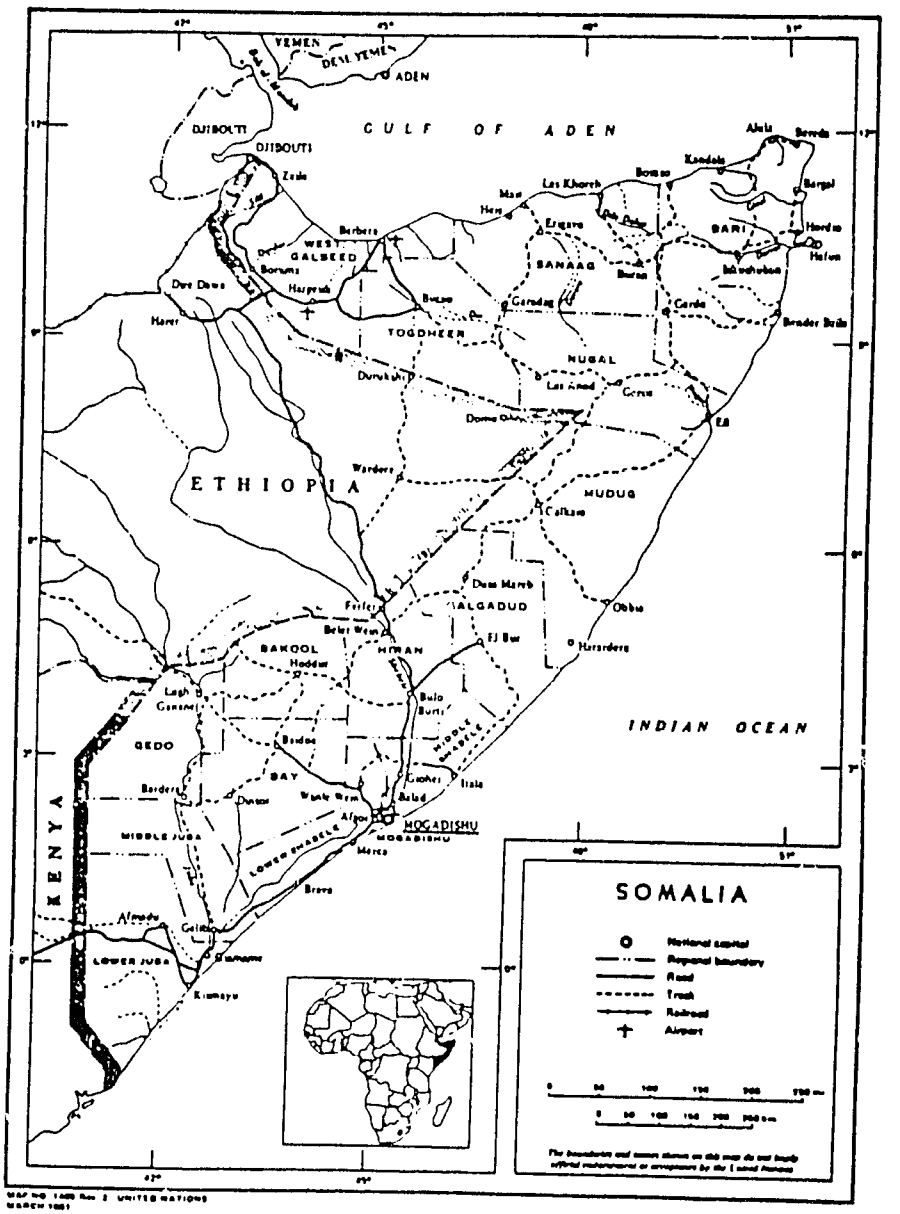
APPENDIX

LIST OF INDIVIDUALS CONTACTED

LIST OF TABLES

LIST OF CHARTS

MAP OF SOMALIA



SOURCE: Somalia Annual Development Report 1984.
United Nations Development Program, Mogadishu. June 1985.

Notes:

1. The spelling of Somali place names follows the official government orthography throughout this document, with the exception of the country name (in both noun and adjective form) which follows the traditional English spelling (Somalia, Somali).

2. All U.S. dollar costs estimated in this document were calculated the exchange rate prevailing in August 1985: So. Sh. 83.76 - US $1.00.

1.0 THE SOMALIA SCHOOL QUALITY ENHANCEMENT STUDY

1.1 INTRODUCTION

The Somalia School Quality Enhancement Study was conducted in August 1985. It was undertaken as the result of the Somalia government's concern for the persistent signals of declining quality of education. The Somalia Education and Human Resources Sector Assessment (MOE/USAID, January 1984) dramatically documents the declining enrollment and increasing repetition and attrition rates in the national education system.

Following many of the recommendations contained in the Sector Assessment, the Ministry of Education (MOE) has set about the process of curriculum reform, teacher upgrading, and school management improvement in order to correct the situation. This study itself is an important part of the MOEs efforts to remedy these problems in order to provide educational opportunities to the people of Somalia.

1.2 STUDY METHODOLOGY

The methodological approach followed by the study team was based upon data assimilation, analysis, and identification of priorities and recommendations; proposed action plans, alternative strategies, and costs were developed for each recommendation.

Data assimilation activities were the most time-consuming portion of the study. These activities included collection and review of documents from Somalia government agencies as well as documents produced by the major donors active in the country. Extensive interviews were conducted with officials at all levels in the educational system, as well as with Somalis in other government and private areas who had passed through the national education system at different times in its development. Special mention must be made of the unfailing courtesy and willingness of Somali government officials to interrupt normal work routines to discuss the issue of improving the quality of education in Somalia. Team members found MOE officials consistently well-

informed concerning the issue of school quality and ready to provide all available information for the team's use.

The analysis of procedures was divided into three major areas of concern. The first is the area of school management and organization. This area was identified by the team as critical for improving school quality, and includes issues affecting teacher performance and community support. The second area of analysis is pre- and inservice teacher training. Following MOE priorities, most attention is given to the primary education system, although secondary education is also considered. Primary education is the most accessible form of formal education; and literacy and numeracy benefits from primary education are the most generalizable schooling outcomes in terms of personal or social development.

The area of teacher training was identified by the Sector Assessment as strategic for quality improvement. The Assessment's recommendations are reviewed in relation to recent MOE efforts in this area. The third area of the study is the development of appropriate instructional materials. This remains a priority of the system and the MOE has undertaken to reform instructional materials for Somali schools since the Assessment.

Within these three major areas, priorities for change were identified and specific recommendation developed for each priority. The recommendations were clustered under priorities in terms of significance in contributing towards the quality enhancement indicated and the efficient use of existing resources. The concern of the government with the issue of school quality dictated that specific action plans be included along with the team's recommendations for change. Recommendations without specific directions for carrying them out would have produced only another study, and would not have provided government planners with the steps they might choose for subsequent implementation. The team was aware of the difficulty in undertaking the priority changes, and with the fiscal constraints now facing government planners. Potential problems within the system following from each

recommendation were also considered and inserted in each section of the study, as well as the implications for effect among the recommendations themselves. Finally, alternative strategies to the recommended action plan were considered. As both development costs to institute change and recurrent cost levels remain critical in Somalia, these were also clearly stated.

Chapter 1.0 of the study presents the context from which the present educational system was developed, and a description of the system as it now exists. Chapter 2.0 presents priority areas and recommendations for school management and organizational practices. Chapter 3.0 discusses the issue of improving the quality of pre- and inservice training for primary and secondary teachers. Chapter 4.0 concludes the results of the study with priorities and recommendations for improving the quality of instructional materials. A summary of all findings is presented in Chapter 5.0.

1.3 HISTORICAL CONTEXT OF THE SOMALI EDUCATION SYSTEM

The rapid expansion of the national education system in Somalia during the last decade has been remarkable. As the result of colonial policies in both northern and southern areas, the existing public education system was both inadequate and inappropriate for the nation at the time of its independence in 1960. The British system in the North and the Italian system in the South continued in effect during the early years of independence, with the colonial languages of the two areas used for instruction. The British colonial government had established a limited system of primary and secondary schools, and some students were sent abroad for further study. Less widespread educational development had occurred in the Italian area. The colonial attitude was consistent, however, in both the North and the South, and neither system attempted to provide educational opportunity for the Somali people.

Because the local educational systems were not developed under the colonial governments, and because Somali language was not used in education, no local text publishing industry grew up as occurred in other African countries such as Ghana, Kenya, Tanzania, and Zambia. During the time of

British and Italian rule there had been no attempt to produce national language texts locally to spread colonial values to Somali society via textbooks, and Somalia remained a society based on oral traditions, with no development of book publishing. This lack of a developed publishing industry continues to constrain national development.

Changes in the education system were achieved quickly following the Revolution of 1969. The modified Latin system of writing the Somali language was introduced in 1972, allowing the development of written Somali as a national language. Following the creation of a national writing system, a national literacy campaign was undertaken in both urban and rural areas throughout the country in a remarkable effort to spread the new system to all Somalis. Schools closed as Intermediate and Secondary students joined in this campaign. The adult literacy rate in Somalia is estimated to have risen from 5% in 1973 to 50% in 1975. International recognition of this effort came in 1975 when UNESCO awarded the country the Korossikaya Literacy Award.

Free and compulsory primary education was established in 1975 with Somali as the medium of instruction. Somali language textbooks for primary education were rapidly created, both to reflect the culture and values of the nation and to develop skills in the written language. The conversion of the secondary system to the national language was slower than in the primary grades, due to the lingering influence of the colonial languages which were more widely used at the secondary level, and also due to the difficulty in creating new Somali texts in the specialized content areas of the secondary curriculum. Somali texts for the secondary system were completed in the late 1970s, but were for the most part hasty adaptations from other foreign language texts. The difficulty of improving the Somali educational system while simultaneously creating Somali language instructional materials remains a central problem today.

A rapid and massive increase in primary pupil intake followed the declaration of free and compulsory primary education. Primary school

enrollment (Elementary and Intermediate) rose from 33,000 in 1973/74 to 219,520 in 1975/76. This in turn caused the government to embark on a program of extensive school building and recruitment of primary school teachers. Perhaps two-thirds of today's primary teachers were among those who were recruited, with little or no training, during this period of remarkable expension of the national education system. Until 1985, primary school teacher trainees were admitted to Halane Teacher Training Institute after only eight years of school. The short course at Halane, in reality a cram course of secondary subjects, has not been adequate to prepare teachers who were little older, and only slightly more educated, than their students. These newly certified primary teachers were then sent into schools with little education, little training and few instructional materials to assist them.

The low salaries paid to primary school teachers has required these men and women to find other employment to support themselves and their families. The declining primary school enrollments suggest that many of these teachers are not only inadequately trained, but are also absent from classrooms in many cases. Recent MOE statistics show a general decline in admissions and increases in repetition and attrition rates (particularly high in the first primary grades). The 1980/81 grade one enrollment was reported as 59,809--less than half the 1975/76 grade one enrollment. In 1983/84, the enrollment figures had dropped to 42,840. Given the low level of trained teachers, unavailability of texts, and lack of school materials, it might be argued that even attendance for eight years of primary schooling would not be sufficient for Somali children to achieve permanent literacy and numeracy. The declining enrollment and increasing repetition and dropouts signal serious problems for achieving government education goals.

A Three-Year Development Plan (1979-1981) was devised to address the problems facing Somalia, and was, in turn, followed by a Five-Year Development Plan (FYP) (1982-1986). The 1982-1986 FYP contains the following development objectives for the education sector:

- continue the process of democratization and expansion of educational opportunities through compulsory universal and free primary education;
- improve the content of educational programs;
- increase the effectiveness of the educational process in developing intellectual abilities, attitudes and values, and in improving studies;
- diversify postprimary education with attention to expansion of technical and vocational education to cope with the critical demand for middle-level manpower;
- expand adult education programs with emphasis on making them functional and strengthen follow-up programs to sustain results;
- strengthen the teaching and popularization of the Arabic language;
- expand facilities for higher education and research; and
- provide training and research facilities for Somali planners.

To reach these goals, the Ministry of Education (MOE) has further specified the following objectives for the 1982-86 FYP:

- to read a level of 52% of six-year-olds as primary school intake;
- to increase the enrollment of secondary schools, particularly technical and vocational schools;
- to improve and strengthen primary and secondary teacher training programs (five primary teacher training centers will be established in the regions as a step towards decentralization);
- to develop and improve nonformal education through the establishment of 7 regional adult education centers;
- to improve the status of women by establishing family life extension centers in rural areas of all districts and family life teacher training centers in all regions; and
- to strengthen Arabic language teaching in all educational institutions and teacher training programs.

A recent MOE report discusses these objectives and the two factors now constraining the expansion of primary education; the high dropout rates experienced in recent years and the lack of resources and financial inputs to carry out educational plans. The report targets two critical areas for improving the educational system:

- reviewing and remodeling the existing educational materials; and
- the effectiveness of teacher training programs.

These areas, along with the issues of school management and organization, form the main areas of concern for this study.

1.4 VARIABLES OF SCHOOL QUALITY

For the purposes of this study of the Somalia educational system, school quality is defined as: 1) the level of material inputs allocated to schools per pupil and 2) the level of efficiency with which a fixed amount of material inputs are organized and managed. This operational definition of school quality focuses upon what learning resources are available to children in Somalia and how efficiently they are organized and managed.

There is no question concerning the affect of aggregate levels of school quality on the achievement of students in developing nations, but there is considerable question concerning the contribution of discrete elements towards that achievement. The research task of defining which of these elements most effectively and cost-efficiently raise student achievement in these nations remains an important item for educators. This research is required for the work of educational planners in reallocating the limited resources available in developing nations in order to achieve higher student achievement. A theoretical framework for such research would pose three questions:

1. Which elements of school quality are related to increases in student achievement and which are not?
2. How much effect is achieved by those elements which are positively related to increases in student achievement?
3. What is the relative cost-effectiveness of those elements of school quality in relation to the size of their effect?

Existing research in the area of school quality provides partial answers to some of these questions. A World Bank study (Textbooks and Achievement: What We Know, October 1978) provides evidence from developed countries of the effect of textbook availability on student achievement. The study concludes that, in the countries involved in the study, the availability of books appears to be the single most consistently positive school factor in pre-

dicting academic achievement. Evidence of the effect of teacher training on student achievement is less strongly supported. A 1978 review of teacher training programs (Husen, et al.) reports positive relationships if 54% of the countries included in the studies, null relationships in 37%, and negative relationships in two cases.

Other studies have investigated such variables as class size, teacher salaries, boarding facilities, library facilities, classroom materials, curriculum content, and social organization and management of the school. Psacharopoulos, et al. (1983), has suggested internal efficiency as a proxy for school quality.

In Somalia today, school quality is a critical issue for national development. The government is firmly committed to an educational system able to produce a literate and numerate citizenry. To achieve this, the quality of the schools must be enhanced and this study represents a step toward the systematic undertaking of this task. As the results of the study indicate, significant results in school quality may be expected from any increase in human and material inputs. At the present time, schools in Somalia frequently are lacking the fundamental elements which define schooling. Since independence, Somalia has endeavored, under the harshest economic conditions, to create a national educational system virtually from the ground up. Limited printing facilities and lack of distribution infrastructure have often resulted in rural area schools without instructional materials. Inadequate training programs and demand for teachers when no training was available have resulted in untrained and inadequately trained teachers in school classrooms. Economic constraints have hindered the creation of adequate inservice programs to support teachers in the schools at the very time such support is most critically needed.

The three major areas of this study, School Organization and Management, Teacher Training, and Instructional Materials, clearly show that increased inputs can be expected to result in dramatic improvements in Somali schools.

Given the dedication and level of effort which teachers and administrators now bring to a system which operates under such severe constraints, the recommended changes in the three study areas hold promise for more efficient use of resources and enhanced school quality.

1.5 STATISTICAL OVERVIEW OF THE PRIMARY, SECONDARY, AND TEACHER TRAINING SUBSECTORS

Primary and General Secondary. The history of primary and secondary enrollments from 1972/73 to 1983/84 is summarized in Tables 1.1 and 1.2. The most recent statistics are presented in Table 1.3. While the closing of the schools during the National Literacy Campaign and subsequent reassignment of students to grades makes interpretation of the data difficult, there is clear indication of opposing patterns at the primary and general secondary levels. On the one hand, grade one enrollments steadily decreased from the 1980/81 through 1982/83. Although enrollments increased in 1983/84, it is still too early to determine if the trend has changed. On the other hand, discounting the enrollment bubbles resulting from systemic changes, general secondary enrollments have steadily increased. These patterns are borne out by the number of schools closed and opened on each level. Since the 1979/80 school year, over two hundred primary schools have closed, while the number of general secondary schools has doubled.

Comparison of the 1983/84 enrollments to the 1982/83 student figures suggests overall progression rates at the primary and general secondary levels of 87% and 99% respectively. While there is no basis for questioning the general secondary rate, the primary progression rate seems at variance with the number of incomplete schools. In 1982/83, 47% of all elementary schools and 64% of all intermediate schools did not have complete four-year cycles.

The percent of female students in the system has remained fairly stable since 1976 at 35 to 36% of primary enrollments. At the secondary level, however, the percentage of young women has increased from 28% to 34% in the last few years. Women teachers tend to be concentrated at the

elementary (34% of all teachers) and intermediate levels (23% of all teachers). Only 8% of the general secondary teachers are women.

The number of teachers per class (government has defined optimal class size as 40 students per teacher) remains high at both the primary and secondary levels. In 1983/84, there were 1.5 teachers for every 40 elementary students, 2.3 teachers for every 40 intermediate students, and 1.6 teachers for every 40 general secondary students.

The data in Tables 1.4 and 1.5 indicate that there are marked regional variations in numbers of schools, numbers of incomplete cycle elementary and intermediate schools, percentages of female students and teachers, and teacher/class ratios. In general, educational opportunities for both girls and boys are greater in urban rather than in rural areas. A study by the Somali Research Unit on Emergency and Rural Development reported, for instance, that many schools in the Nugaal region had no teachers due to the poor living conditions in the area.

Other reports have indicated that there are widespread shortages of textbooks, supplies, and basic classroom furniture at the primary level. While shortages are generally more severe in rural areas, they have even been noted in the capital region of Banaadir. In addition, since most primary schools were originally built with low quality materials, many have not lasted and major reconstruction is necessary. Only 21.2% of the planned outlay for primary construction in the early eighties was actually allocated, so capital expenditures in the next plan period will be necessarily high.

Although there is little data on the availability of texts and supplies in general secondary schools, shortages are apparently not as great as those found in primary schools. Various UNESCO reports indicate, however, that science laboratories and equipment are generally underutilized and in poor repair.

Government per-pupil expenditures at the primary level are estimated at So. Sh. 648 per year. General secondary per-pupil expenditures are estimated

TABLE I.1

PRIMARY SCHOOL ENROLLMENTS BY GRADE AND PERCENT FEMALE
1972/73 - 1983/84

GRADE:	I		II		III		IV		V		VI		VII		VIII		TOTAL	
Year	Total	%F	Total	%F	Total	%F	Total	%F	Total	%F	Total	%F	Total	%F	Total	%F	BY YEAR	%F
1972/73	21,002	29	14,894	27	10,096	NA	7,453	26	6,980	24	7,507	22	5,208	22	4,973	24	78,133	26
1973/74	24,333	34	20,172	29	12,945	27	10,043	24	7,281	26	7,733	24	6,925	23	5,471	23	94,903	28
1975/76	133,605	48	38,233	32	15,396	27	10,472	27	-	--	7,549	25	6,932	24	7,330	25	219,517	34
1976/77	68,256	40	86,505	37	41,619	29	14,838	28	10,425	29	7,637	26	-	--	-	--	229,280	35
1977/78	41,631	40	51,752	40	72,311	38	38,410	30	14,154	33	10,286	29	-	--	-	--	228,544	36
1978/79	62,913	37	37,990	38	47,408	39	64,892	36	36,507	30	13,991	29	-	--	-	--	263,751	36
1979/80	48,272	37	47,019	37	35,756	39	43,888	38	60,364	37	35,830	30	-	--	-	--	271,129	36
1980/81	59,809	32	40,212	36	40,838	37	31,135	38	18,290	42	22,111	34	24,857	42	34,452		271,704	36
1981/82	47,507	33	37,922	32	33,118	36	33,882	37	26,314	37	15,418	43	19,649	34	26,086		239,896	36
1982/83	37,415	34	33,153	32	29,809	34	28,232	36	31,113	35	22,540	37	13,928	41	22,526		218,716	35
1983/84	42,840	37	31,275	35	28,579	34	26,843	34	27,247	36	27,052	35	19,998	37	16,846		220,690	36

Source: Ministry of Education, Statistics of Education, 1982-83, 1984

Note: During 1974/75 the schools were closed to free personnel for the National Literacy campaign. The first grade cohort in 1975/76 consisted of children who were ready for first grade in 1974/75 and 1975/76, as well as those left back in 1973/74. In 1980/81, primary education was changed from six to eight years. Fourth grade graduates were promoted to either fifth or six grade and fifth grade graduates entered seventh or eighth grade.

TABLE 1.2

SECONDARY ENROLLMENTS BY GRADE AND PERCENT FEMALE
1972/73 - 1983/84

GRADE	IX		X		XI		XII		TOTAL	
Year	Total	%F	Total	%F	Total	%F	Total	%F	BY YEAR	%F
1972/73	2,991	15	2,444	14	2,405	17	1,617	15	9,457	15
1973/74	3,383	18	2,623	17	2,375	15	2,119	17	10,500	17
1975/76	1,827	14	3,002	16	2,025	13	192	15	7,046	15
1976/77	6,622	27	2,104	15	2,162	20	1,778	23	12,666	23
1977/78	6,890	28	3,174	22	2,600	21	1,514	25	14,178	25
1978/79	8,857	25	6,934	29	2,661	22	2,349	26	20,801	26
1979/80	10,701	29	7,496	25	3,878	25	2,298	27	24,373	27
1980/81	26,452	29	9,672	26	5,604	34	3,763	28	45,491	28
1981/82	22,699	32	23,191	30	6,982	28	4,858	30	57,730	30
1982/83	17,776	39	22,480	33	18,071	30	6,672	33	64,999	33
1983/84	12,873	33	17,381	39	17,962	30	16,153	34	64,289	34

Source: Planning Division: Ministry of Education, 1985

TABLE 1.3

EDUCATION STATISTICS 1983-1984

	Schools	GRADE I Students	GRADE I % Female	GRADE II Students	GRADE II % Female	GRADE III Students	GRADE III % Female	GRADE IV Students	GRADE IV % Female	TOTAL Students	TOTAL % Female	TEACHERS Total	TEACHERS % Female	TEACHERS Per Class
Pre-Elementary	16	839	55	362	52					1,201	54	135	95	4.5
PRIMARY														
Elementary	712	42,840	37	31,275	35	28,579	34	26,843	34	129,537	35	4,804	43	1.5
Intermediate	596	27,427	36	27,052	35	19,998	37	16,846	41	91,143	37	4,656	21	2.0
Total Primary	1,308	70,267	36	58,327	35	48,577		43,689	37	220,680	36	9,460	33	1.7
SECONDARY														
General	79	9,935	34	13,819	38	15,064	33	14,774	34	53,591	35	2,201	7	1.6
Technical/ Vocational	27	2,217	26	2,144	32	2,570	13	895	19	7,828	22	684	9	3.5
T.I.C.	1	613	43	1,223	60	---	---	---	---	1,836	55	153	12	2.9
Correspondance	1	108	25	116	41	328	43	484	47	1,036	43	17	47	0.7
Total Secondary	108	12,873	33	17,301	39	17,962	30	16,153	34	64,291	34	3,035	08	NA
NON-FORMAL														
Women's Education	90	5,746	100	2,939	100	735	100	450	100	9,870	100	591	99	2.4
Adult Education	---	7,734	48	3,870	45	2,297	43	---	---	13,901	47	---	---	---
Total Non-Formal		13,480	70	6,809	69	3,032	57	450	100	23,771	69	---	---	---
GRAND TOTAL		97,459	41	82,799	38	69,571	35	60,292	37	309,943	38	12,630	30	1.7

Source: Planning Division, Ministry of Education, 1985

Note: 1) Primary teachers and facilities are used for Adult Education.
2) The teacher count includes 1298 part-time teachers and 230 National Service Teachers.

at So. Sh. 1,900 for day students and So. Sh. 5,491 for boarding students.

Vocational/Technical. The number of vocational/technical secondary schools has declined since 1982/83 while total enrollments have remained fairly constant. The vast majority of students and teachers are men, 83% and 89% respectively. The recent Deutsche Gesellshaft fur Technische Zuzammenarbeit (GTZ) study of this subsector reported that: 1) 60% of the schools have no textbooks; 2) the vast majority of the equipment and machines cannot be used due to poor maintenance procedures and the lack of funds for spare parts; and 3) the curricula are biased in favor of theory to the virtual exclusion of practical experience. The GTZ analysis of the demand for technical manpower indicated that the current capacity of the schools is sufficient for the next ten-year period.

While estimates of unit costs are not available for vocational/technical schools, the number of teachers per class, 3.5 as compared to 1.6 for general secondary schools, indicates that the cost of a day student is at least So Sh. 3,167 per year or the cost of 4.9 primary students.

Teacher Training Institutes. All trained teachers are graduates of either Halane (primary) or Lafoole College of Education (secondary). In the coming year, the Halane site will no longer be used and the possibility of offering programs in both Moqdisho and Hargeysa is being explored. At the same time, government is attempting to change the intake for primary training from primary to secondary leavers. Previous attempts in this direction have not been successful due to the low status of primary teachers.

Although no enrollment and cost figures are available for Halane, the assumption can be made that the base cost per student is similar to the per-boarding-student cost for general secondary. In addition to free training, first year students receive an allowance of So. Sh. 50 per month, while second year students are placed on government salary. They receive So. Sh. 530 per month and return So. Sh. 200 to help defray their expenses.

TABLE 1.4

PRIMARY EDUCATION CHARACTERISTICS BY REGION
1982 - 1983

	Elementary Education						Intermediate Education					
	Number of Schools	Number Incomplete	Student Enrollment	Percent Female	Average No. Teachers Per Class	Percent Female	Number of Schools	Number Incomplete	Student Enrollment	Percent Female	Average No. Teachers Per Class	Percent Female
W/Galbeed	88 (+9)	45	23,517	23	1.1	25	59 (+4)	35	8,598	27	1.8	11
Togdheer	30 (-1)	19	2,880	29	1.7	26	22 (-4)	11	2,928	25	1.9	9
Sanaag	19 (-3)	11	1,134	24	1.6	20	21 (-1)	15	1,556	23	1.8	4
Bari	35 (+1)	15	1,932	27	2.6	23	30 (+1)	25	1,424	27	3.0	12
Nugaal	16 (+3)	13	1,096	29	1.6	20	17 (+2)	13	1,592	31	1.7	12
Mudug	16 (-4)	12	749	43	2.6	45	14 (-5)	9	870	42	2.7	16
Ga/Gaduud	20 (-5)	14	1,190	45	2.7	44	21 (-4)	15	1,469	43	3.1	11
Hiiraan	44 (-3)	18	11,479	27	1.6	29	38 (+2)	26	5,306	24	2.4	10
Sh/Dhexe	58 (-13)	22	5,387	37	1.3	30	55 (-15)	46	4,335	33	2.2	19
Banaadir	55 (0)	0	36,827	47	1.6	59	55 (+1)	2	34,189	46	2.1	41
Sh/Hoose	127 (-6)	55	16,556	36	1.7	29	108 (-5)	61	13,657	35	2.4	16
Bay	51 (+3)	29	4,871	38	2.0	30	43 (+3)	28	3,801	37	2.7	19
Bakool	22 (+3)	17	1,336	34	1.7	13	18 (0)	13	991	34	3.6	15
Gedo	31 (+1)	9	10,256	17	1.5	22	26 (+3)	18	2,066	23	3.1	14
J/Dhexe	53 (+4)	33	3,671	30	1.6	13	42 (+6)	30	2,365	24	2.7	7
J/Hoose	52 (0)	25	5,748	33	1.7	32	51 (+2)	33	4,980	29	2.8	12
Total	717	337	128,609	519	2	36	620	380	90,117	37	2.3	23

Sources: Ministry of Education, Planning Department, Statistics of Education 1982/83, 1984

Ministry of National Planning and USAID, Somalia: Education and Human Resources Sector Assessment, 1984

( ) = change in number of schools from 1981 - 1982

TABLE 1.5

SECONDARY EDUCATION CHARACTERISTICS BY REGION
1982 - 1983

	General Secondary					Technical/Vocational *				
	Number of Schools	Student Enrollment	Percent Female	Number of Teachers	Percent Female	Number of Schools	Student Enrollment	Percent Female	Number of Teachers	Percent Female
W. Galbeed	10	5,272	23	169	3	5	1,177	28	84	7
Togdheer	4	2,023	19	89	4	2	281	0.4	29	3
Sanaag	3	726	19	30	0	1	148	0	11	0
Bari	2	906	22	21	5	0	0	0	0	0
Nugaal	3	1,019	22	56	0	0	0	0	0	0
Mudug	1	429	34	12	0	0	0	0	0	0
G. Gaduud	2	692	28	42	0	0	0	0	0	0
Hiiraan	3	1,987	27	72	0	0	0	0	0	0
Sh/Dhexe	4	1,418	24	84	14	1	223	76	17	12
Banaadir	18	27,672	42	1,677	11	10	6,289	44	425	16
Sh/Hoose	10	4,455	25	226	1	10	2,875	10	228	4
Bay	5	1,930	27	110	6	0	0	0	0	0
Bakool	1	293	17	24	0	0	0	0	0	0
Gedo	3	525	21	40	0	0	0	0	0	0
J/Dhexe	2	499	28	36	0	2	614	5	36	0
J/Hoose	5	2,081	28	136	11	1	138	0	9	0
Total	76	51,927	34	2,832	8	32	11,745	17	839	11

Source: Ministry of Education, Statistics of Education 1982/83, 1984

* Does not include Correspondance School in Banaadir

Unlike Halane, Lafoole College of Education is under the jurisdiction of the Ministry of Culture and Higher Education. The Ministry of Education, however, has some influence in selection of the students, the allocation of students across major fields, and the content of the curriculum. The program is three years and emphasizes secondary subject matter content. A minimal number of core education courses are required and there is no provision for supervised practice teaching. Graduates are expected to teach in secondary schools, but the number which actually fulfill this requirement is not known.

The 1983/84 enrollments by major field are shown in Table 1.6. The data in the table indicate that students are fairly well distributed across each field, with the largest concentration (19%) in agriculture education. The faculty consists of 52 full-time and 37 part-time professors. The Somali staff is supplemented by 11 expatriates. Three percent of the faculty hold doctorates, 34% master degrees, and 63% bachelor degrees. Only 5% of the faculty are women.

This statistical portrait indicates that greater investments in the quality and quantity of resources allocated to primary schools are necessary. Investments in the expansion of the general secondary and vocational/technical schools have acted as a major constraint to improvement of the primary level. Such investments, however, cannot be rationalized on equity grounds until such time as the achievement of primary graduates is improved. Until then, all secondary schools will be forced to play a remedial role in the education system.

TABLE 1.6

LaFoole Enrollments by Major Field
Year of Study, and Sex
1983/84

Major Field	Year I		Year II		Year III	
	Male	Female	Male	Female	Male	Female
English	21	9			28	42
Arabic	32	7	4	-	23	3
History	71	30	-	-	44	28
Geography	30	15	-	-	42	17
Biology	44	21	49	11	23	4
Agriculture Education	79	15	43	14	41	20
Chemistry	58	2	35	5	35	4
Physics	42	1	25	4	18	4
Mathematics	31	9	13	11	45	12
Physical Education	9	1	14	1	28	3
Journalism	37	8	32	13	19	8
Total	461	118	215	59	346	145

Grand Total: 1,344 Percent Female: 24

Numbers of Graduates since 1973: 3,561

Source: Lafoole College of Education, 1985

2.0 SCHOOL ORGANIZATION AND MANAGEMENT

2.1 INTRODUCTION

The purpose of all school organization and management structures is to support the teaching-learning process in the classroom. Decisions which ultimately affect how and what students learn and, to a large extent, their willingness to learn are made at all levels of school governance. The most important decisions taken by national government are those related to the training of teachers, the curricula, the length of the school day and the school year, the distribution of resources, and the nature of the support mechanisms to be made available to schools and teachers.

Intermediate levels of government, such as regional and district offices, function as links between the national and local systems. They report the status and difficulties of schools to the national level and ensure that teachers and materials are allocated efficiently across schools. In addition, decisionmakers at this level make important choices about the means used to provide support and solve particular local problems.

The role of the school in educational governance has been described as that of a "switching station" where particular teachers and materials are assigned to groups of students for a given period of time. In this context, the quality of the headmaster is central to the efficient and effective allocation of services, time, and goods across classrooms.

Within classrooms, the teachers' task is to organize students and materials in such a way as to maximize both instructional time and the learning of individuals. This implies that teachers must be skilled managers adept in organization and personal relations, as well as masters of their subject matter and teaching techniques.

The complicated governance structure of educational systems is characterized by the strong dependency of the teachers and students on external support. Where classes are continuously interrupted, inadequate collegial guidance available or the materials supplied too few in quantity or

of inferior quality, little learning will take place. While this is particularly true of classes managed by inexperienced, untrained, or poorly trained teachers, it also applies to the classes of experienced, well-trained, and creative teachers.

Given the critical role of school organization and management in the production of incentives for teachers and students, this chapter reviews the current governance structures for primary and general secondary education, identifies strengths and weaknesses in their operations, and makes recommendations for improving both their efficiency and effectiveness.

The chapter begins with a review of the recommendations for improvement in management presented in the Sector Assessment and a description of organizational changes since that report.

2.2 CURRENT STATUS

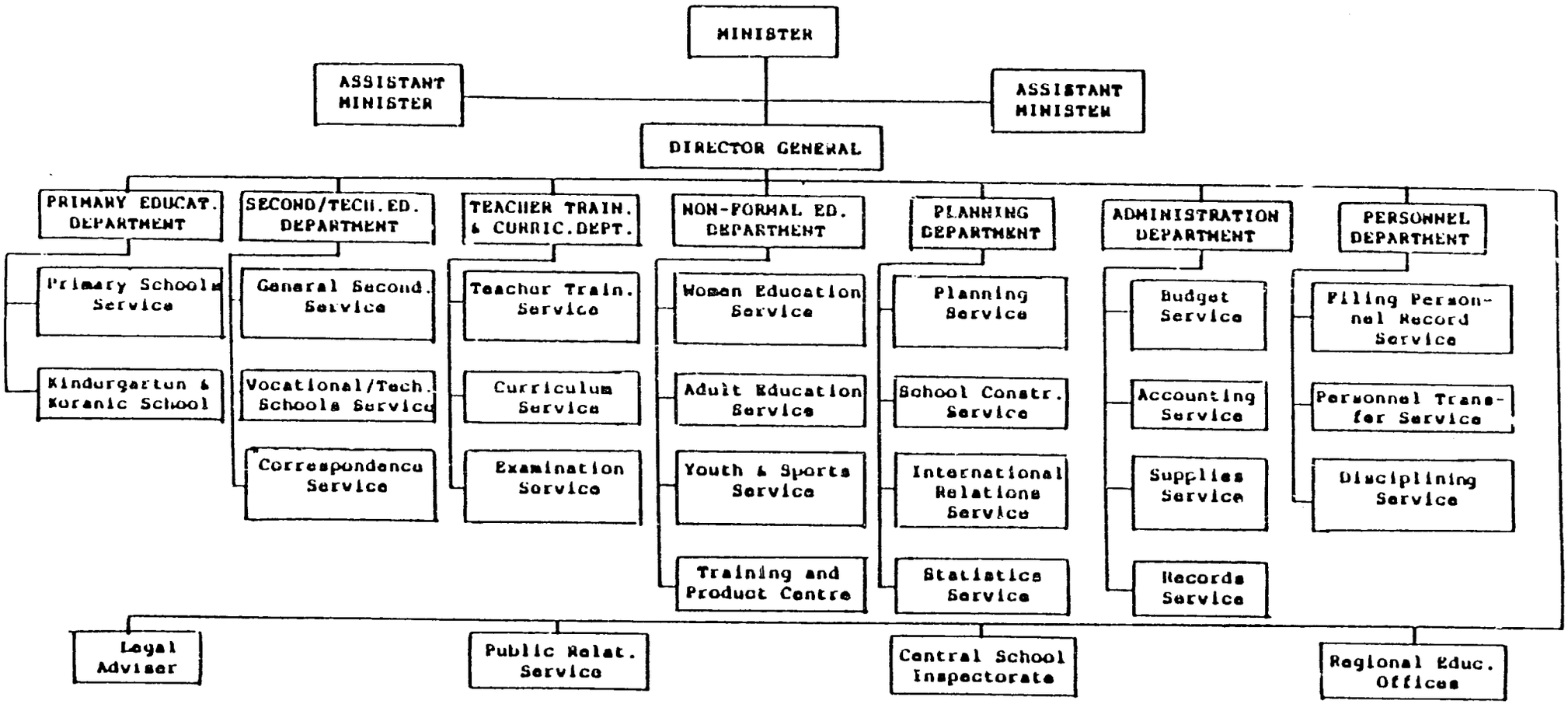
The Sector Assessment made seven recommendations for the organization and management of schools.

1. Provide complete cycle instruction at all elementary and intermediate schools.
2. Review the pay and assignment system for remote area teachers.
3. Improve supervisory and support systems provided by the Inspectorate.
4. Eliminate redundancy in the assignment of responsibilities within the Ministry.
5. Devolve authority for day to day management to mid-level managers in order to free senior staff for planning and policy decisions.
6. Strengthen the capacity of the Planning Department.
7. Upgrade management and skill training for MOE staff.

Since the Sector Assessment, there have been a number of changes in the structure of the Ministry of Education. These differences can easily be seen by comparing Charts 2.1 and 2.2. The leadership of the Ministry is now provided by the Minister, two Vice-Ministers, and the Permanent Secretary. Four Directors General (Education Development, Nonformal Education, Primary,

Chart 2.1

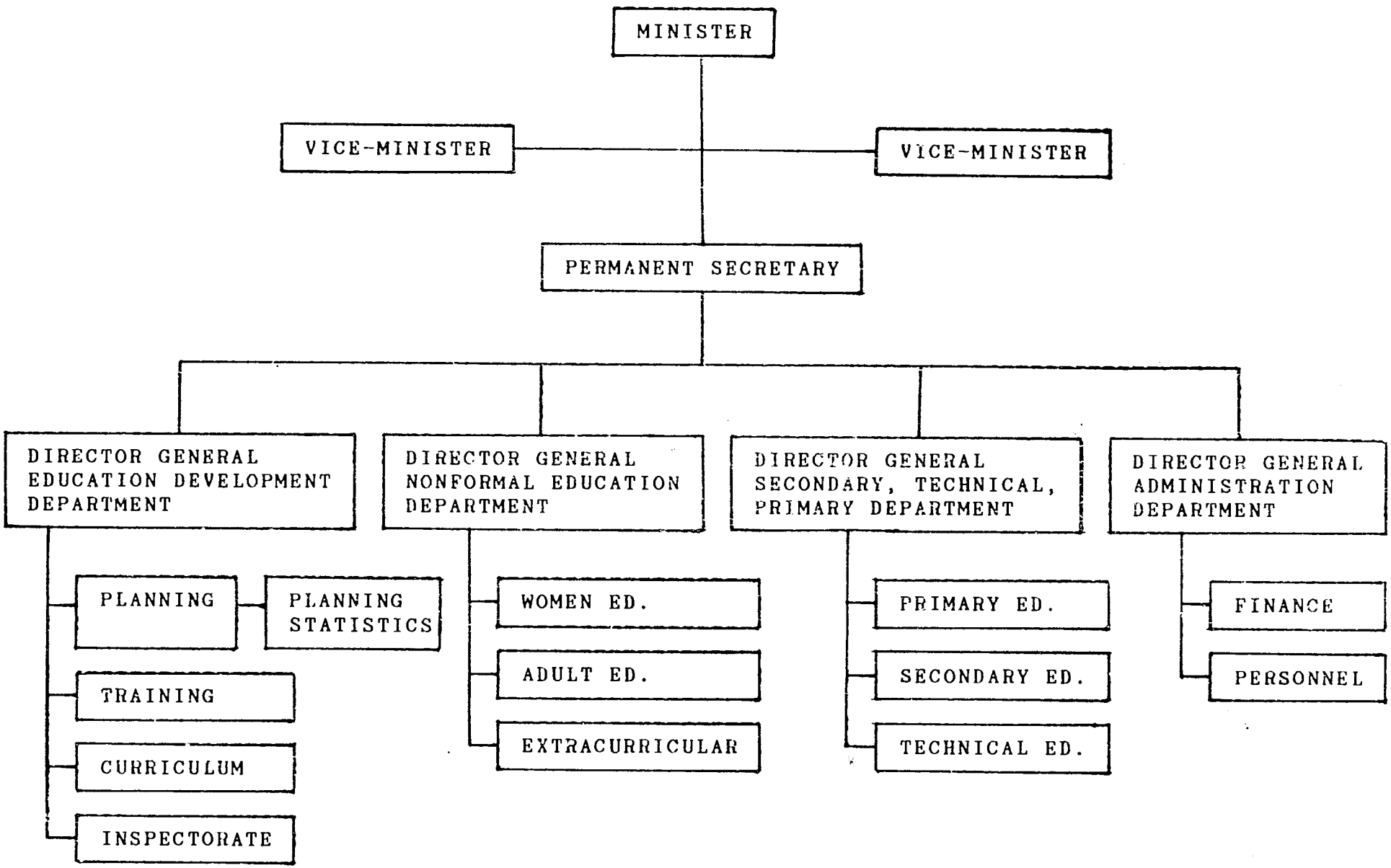
ORGANIZATION CHART - MINISTRY OF EDUCATION 1983



21

CHART 2.2

ORGANIZATIONAL CHART - MINISTRY OF EDUCATION 1983-1984

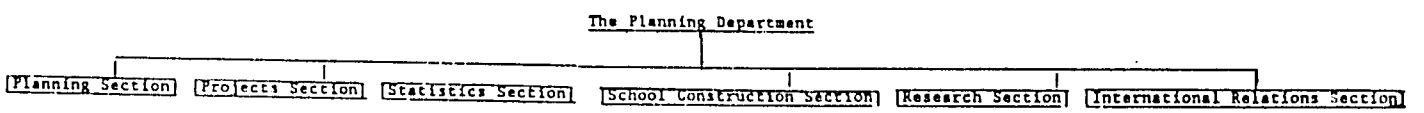


Secondary, and Vocational/Technical Administration), and 21 Regional Education Officers who report directly to the Permanent Secretary.

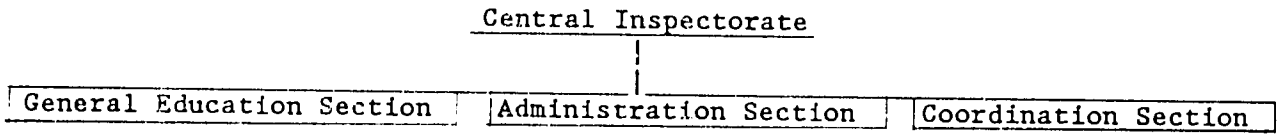
As a comparison of the charts indicates, the MOE has taken steps to devolve authority and redefine the scopes of work for many of the subdivisions. A number of the recommendations from Sector Assessment, however, have not yet been implemented due to shortages in human and material resources. Many of these are repeated in this analysis because of their centrality to the production of learning.

The agencies of particular relevance to the issues addressed in this chapter are the Department of Education Development, Primary, Secondary, and Vocational/technical and the Regional Offices. The Division of Education Development is responsible for oversight and development of the entire precollegiate system, with the exception of certain vocational/technical schools operated by other ministries. The Division has four departments: Planning, the Central Inspectorate, Training, and Curriculum. Each department is subdivided, in turn, into the task oriented units such as those shown below for Planning and the Central Inspectorate. Each task unit, however, does not necessarily have unique personnel assigned to it since many of the departments in the MOE are understaffed.

The Planning Department (see below) is responsible for analyzing data on schools, teachers, and students; forecasting system requirements for buildings, teachers, materials and supplies; negotiating and monitoring donor funded projects; implementing government-funded projects; and planning and exercising quality control over new construction. The Department is staffed by two statisticians (including the Director), one economist, one engineer, and three individuals who are receiving on-the-job training in basic statistical analysis.

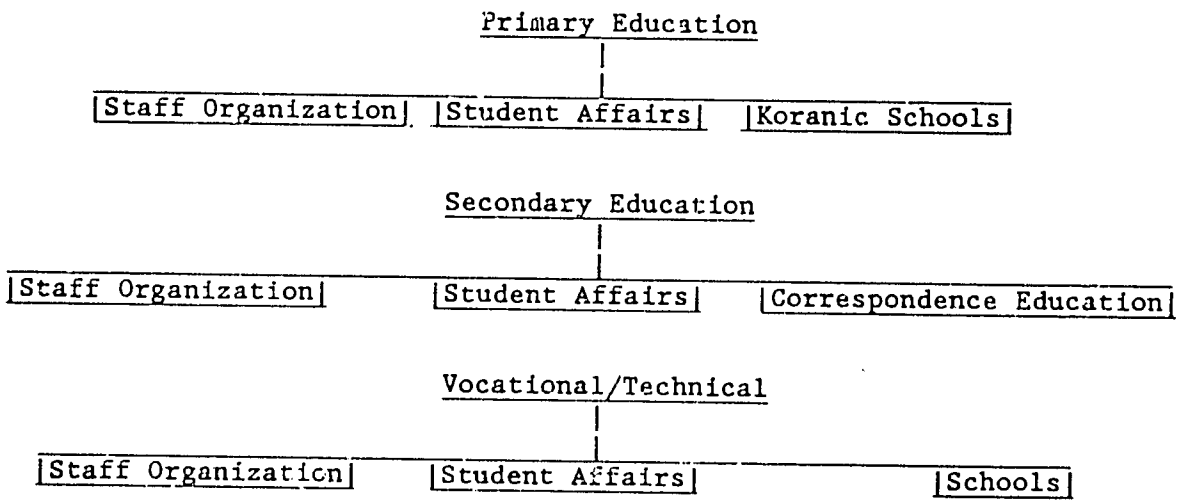


The Central Inspectorate (see below) provides the link between the Division of Education Development and the Regional Offices. Its responsibilities are partially supervisory and partially supportive. Supervisory services are provided by the Education Section which is accountable for curriculum implementation in the schools. For the most part, the actual supervision is carried out by the regional and district inspectors who report directly to the Central Inspectorate as well as to their Regional or District Officer. Theoretically, the Central Inspectors visit schools twice a year and Regional and District inspectors at least three times. Shortages of vehicles and fuel, however, mean that regular visits are made to the schools nearby, while the more remote schools are visited less frequently or not at all.



Supportive services in the form of the distribution of textbooks and collection of Regional and District Inspectors reports are supplied by the Administration and Coordination Sections. Recently, the Central Inspectorate has undertaken responsibility for the inservice training of Regional and District Inspectors. The Department has a staff of 14.

The Division of Primary, Secondary, and Vocational/technical Education has three sections, one for each level of schooling. The organization within each section is as follows:



The staff organization units assign new teachers to schools, maintain teacher records, project the number of teachers needed in each subject area, and specify the number of teachers who can attend the College of Education in the following year. Similarly, the student units in each section are responsible for student records, including schools attended, transfers, and examination marks. The third unit in each section, Koranic Schools, Correspondence Education, and Schools, respectively, are essentially program units with oversight functions. The Directorate's total staff is 16. All have had some training beyond secondary school either at Halane, Lafoole College of Education, or the Technical Teachers Training College.

The Regional Education Offices have grown from 18 in 1982/83 to 21. The four new offices were created by dividing the capital region of Banaadir which contains Moqdisho into four regions. This move was justified on the basis of population density. The Regional Offices were designed to decentralize decisionmaking so that problems at the school level could be identified and resolved more rapidly. The Regional Education Officers (REOs) are responsible for visiting schools, assessing their strengths and weaknesses, identifying and resolving personnel problems, reporting to the Ministry on the condition of education (teachers, enrollments, students) in the regions, and paying salaries to the teachers. These tasks are carried out with the assistance of the Regional Inspectors, the District Education Officers (DEOs), and the District Inspectors.

Each region is subdivided into one or more districts, depending on its size. The Regional Offices are headed by a REO and staffed by three Regional Inspectors, one or more accountants, and support personnel (watchmen, janitors etc.). DEO report directly to their REO. The DEOs' offices are staffed similarly to those of the REOs: one inspector, one accountant, and support personnel.

2.3 RECOMMENDATIONS

In this section recommendations for improving the efficiency of educational organization and management structures are specified, potential problems in implementation discussed, and alternative strategies and costs described. In brief, the recommendations, organized into three priority areas, are:

- Increase the Incentives for Teacher Productivity
  - Increase Teachers' Salaries
  - Provide Incentives for Teaching in Remote Areas
  - Revise Teacher Tenure and Promotion Procedures
  - Increase the Nonmonetary Rewards to Teachers
- Revise School Organization Structures
  - Strengthen the Educational Leadership in the School
  - Change Practices Governing the Allocation of Teachers Within Schools
  - Expand the Number of Multigrade Classrooms, Particularly in Remote Areas
  - Increase the Effective Length of the School Year and the School Day
  - Establish Community Advisory Committees
- Strengthen Evaluation and Support Services to Schools
  - Strengthen the Regional and District Education Offices
  - Redefine the Role of the Central Inspectorate
  - Increase the Capacity of the Planning Department

2.3.1 FIRST PRIORITY: Increase the Incentives for Teacher Productivity: Recommendations 1-4

Recommendation 1: Increase Teachers' Salaries

Recommendation 2: Provide Incentives for Teaching in Remote Areas

Recommendation 3: Revise Teacher Tenure and Promotion Procedures

Recommendation 4: Increase the Nonmonetary Rewards to Teachers

Description. Many of the issues touched upon in this section are presently under review in the larger context of the Somali civil service reform. Nonetheless, they are of such importance to the improvement of educational quality that it would constitute a disservice to ignore them here.

Salaries act as the primary sign of the value government places on the activities of a particular subsector. To the extent that teachers' salaries represent less than a living wage, and are significantly below private sector

salaries for each level of educational attainment, teaching will be viewed as a way station to employment with greater monetary rewards or perquisites. This, in turn, carries a tremendous opportunity cost for government since the sums invested in the training of these individuals cannot be recovered and additional monies must be invested in training replacements. From a financial perspective alone, it is very much in the interest of government to increase the retention rate of trained teachers. While no data on teacher turnover is available, attrition is apparently high enough to cause the Ministry of Education great concern. From an educational viewpoint, the constant influx of relatively inexperienced teachers and the continued dependency on untrained teachers detracts from the stability and improvement of the educational enterprise.

In 1983/84, primary teacher salaries averaged So. Sh. 683 per month net of taxes. At the same time, the World Bank estimated that the minimum average monthly expenses for a family of four living in the Hoqdisho area were So. Sh. 8,650 (see Appendix I). If it is assumed most primary teachers are single, and that their expenses are roughly one-third those of a family of four, salary contributes only about 12% to their cost of living each year. The discrepancy between the cost of living and salary is considered the single most important cause of the high rates of absenteeism, attrition, and low morale among primary teachers. Given the serious consequences of current salaries, it is safe to say that all other efforts to improve the quality of primary schooling will be constrained and perhaps futile unless teachers' salaries are increased. It is suggested that average primary salaries be raised as quickly as possible to the real cost of living, So. Sh. 2,854 per month. As a first step, an immediate raise to half that amount, So. Sh. 1,427, is recommended.

The salary situation at the secondary level is also serious. The average monthly teacher salary in 1983/84 was So. Sh. 1,540, while the average monthly salary of secondary leavers in the private sector was estimated at So. Sh. 10-

12,000. Since these teachers are likely to have families, their salaries also fall well below their expenses. It is recommended that the average secondary teacher salary be raised, as a first step, to So. Sh. 4,325 per month and later to So. Sh. 8,650.

To further assist teachers in meeting the costs of living in the interim, an increase in the food supplied to schools might be negotiated with the appropriate donors the food supplied to schools so that teachers receive their meals at school. Another form of much needed assistance is the provision of teacher housing. Since salaries are apt to increase more slowly than the real cost of living, free or subsidized housing would help defray expenses. Teachers' real incomes could also be enhanced by paying them for necessary work during vacation periods. Teachers with appropriate skills, for instance, could be employed in school rehabilitation or inservice training projects in their local areas.

In addition to these incentives, government's commitment to an equitable distribution of teacher experience across schools suggests that incentive payments should be reestablished for teachers working in remote areas. The immediate benefit of assigning experienced teachers to schools in these areas is that these teachers, using multi-grade organization methodologies, could upgrade incomplete elementary and intermediate schools to four grades. The implications of multi-grade teaching for teacher training and material resources are discussed in a later section.

It is recommended that remote area teachers receive a substantial allowance over and above salary and, on the basis of their formal evaluations, be given preference in future assignments and priority for further training. A more substantial bonus might be given in areas where it is feasible to employ the teacher to provide additional services such as adult or women's education. To the extent that the teacher is paid less than two full salaries, government would realize a savings. The constraint of recurrent costs is discussed further on pages 2-18, 19, and 20.

At the present time, there is evidence that teaching is considered at best a temporary occupation. Responding, perhaps, to poor teacher attendance and the scarcity of learning materials in the classroom, fewer parents are enrolling their children in school. There is no evidence that teaching is perceived as an occupation to which parents would be proud to have their children aspire. The position of the teacher in the village is reported as low status and older traditions of respect seem to have eroded.

This situation is at odds with the emphasis that government has placed on the role of education in development and the efforts which have been made to extend schooling to even the remotest regions. While improvements in teacher salaries will go a long way toward changing both teacher behaviors and parental perceptions, it is also suggested that the contributions of teachers be recognized at the district, regional, and national levels. In doing this, it is important to:

- involve the community,
- ensure that the achievements being commended are real, and
- make every effort to publicize those achievements in the media.

Salaries and awards are not, however, the only incentives which can be used to improve teacher retention and performance. Additional incentives can be imbedded in the rules and regulations governing tenure and promotion. Currently, these rules and regulations, many of which were designed for civil servants in general rather than teachers in particular, neither recognize teaching as a profession nor provide rewards for teacher productivity.

Success on the primary teachers' examination is rewarded by opportunities to train for secondary teaching at Lafoole College of Education or serve as a Headmaster. Those receiving the highest marks are sent to Lafoole and those who pass, but receive lower grades, are promoted. Similarly, success at the secondary level often leads to ministry or private sector employment. In short, the current incentive structure encourages the best teachers to leave the classroom. This is particularly serious at the primary level where there

are still large numbers of untrained teachers and where the foundations for all further learning are established.

The second imperative in raising the status and morale of teachers is, therefore, to make teaching a profession. This first requires the creation of separate but equivalent (given similar training, experience, and performance ratings) career paths and salaries for primary and secondary teachers. Secondly, it requires yearly formal evaluations and college level training in primary education. Such training could be optional for those already in the teaching force, but mandatory for new entrants (Chapter 3.0).

These requirements are justified by the commitment government makes to its employees and is used in most professions to ensure that the entrant can apply skills or is willing to learn the skills necessary to serve the client well. It implies an evaluation system which is viewed as fair, but at the same time allows headmasters, inspectors, and others involved in the school a means of minimizing the number of weak teachers. The requirements for fairness and screening suggest the need for objective evaluation standards and a formal review process that includes, but is not limited to, the teachers' colleagues in the school. It also raises the question of whether the teacher examination, which is essentially a university entrance examination, should play such a large part in promotion decisions.

Potential Problems. There are a number of problems related to increasing the incentives for teacher productivity. The first is that raising teachers' salaries has implications for the entire civil service salary schedule and thus for the fiscal capacity of government. Recently, however, the government has indicated a willingness to top up salaries in specific educational institutions. It can be argued that the low wages of the primary teachers, and the educational consequences of those wages, demand priority attention and action of a similar nature even though the numbers of individuals involved is far greater. Similar arguments also can be made for considering teachers as a special subset of civil servants governed by different rules and regulations.

The second problem lies in the fact that it is extremely difficult to forecast the wage and perquisite level at which teachers will compare teaching favorably with other career opportunities. Nonetheless, the level of current salaries suggests that a raise which enables teachers to live on their wages is likely to do much to raise morale to the level it was at during the Literacy Campaign and, in so doing, decrease teacher turnover. Raises beyond the cost of living, however, should be based on information regarding the alternative employment opportunities available to trained primary and secondary teachers.

Finally, instituting formal evaluation mechanisms may be perceived as a threat by teachers. This anxiety can be dissipated by involving teachers from the outset in the design of the evaluation instrument and establishing an appeal system which allows teachers to challenge a particular evaluation. Similarly, if teachers play a large role in selecting colleagues for special commendation, award certificates are apt to be valued highly and perceived as fair.

Action Plan

1. Design and implement a study of teachers. Obtain and analyze data on teachers' background characteristics (region of origin, years of schooling, marital status, age), behavior patterns (absenteeism, teaching load, other school responsibilities, participation in inservice, contact with parents), alternative career opportunities, and housing situation. The purpose of such a study is to provide government with the necessary data to refine the teacher incentive system.

2. Determine the true cost of living. Create a mechanism for regularly receiving information from the Ministry of National Planning on the cost of living in different regions.

3. Request an increase in teachers' salaries. Develop new scales for teacher salaries based on the information from steps 1 and 2. Develop alternative strategies for financing additional costs. Submit the request for an increase in teachers' salaries (with justifications and strategies) to appropriate policymakers.

4. Study the special needs of remote area teachers. Obtain information from teachers, Regional and District Education Officers on living conditions in different remote areas in need of teachers. This data collection activity may be combined with the larger study of teachers.

5. Develop special incentives for remote area teachers. On the basis of the information obtained in steps 2 and 5, develop a set of

incentives for remote area teaching in different regions. Submit request with documentation to appropriate decision makers.

6. Request the exemption of the precollegiate teaching force from civil service regulations governing the period of obligated service, tenure and allowances. Develop the rationale for considering teachers as a special subset of civil servants. Draft a new set of regulations. Submit to policymakers with appropriate justification.

7. Establish a formal system of teacher evaluation and promotion. Develop a teacher evaluation instrument incorporating measures of effort (attendance and participation in school activities and inservice). Send the evaluation instrument to Regional Offices and headmasters for review and comment. Field test in a number of schools and discuss results with teachers. Based on this information revise the instrument. Request approval for its use.

8. Provide new training incentives for primary teachers who pass the teacher examination. Develop a college level program in primary education. Determine the institutional structure for such training. Request permission to implement such a program.

9. Establish a mechanism for recognizing teacher productivity and effort. Develop guidelines for teacher behaviors the MOE would like to reinforce. Discuss with REOs and selected headmasters and teachers. Decide who should give awards and how often. Request appropriate approval.

Alternative Strategies and Costs. The chief constraint that government faces in increasing teacher's salaries has been imposed by the necessity of containing the recurrent budget. The costs of the new salary levels can be partially financed by a combination of strategies:

- privatizing preprimary schooling,
- eliminating redundancies within the system, and
- containing the growth of general secondary and vocational/technical schooling. Each of these strategies is discussed briefly below.

In the 1983/84 school year, 16 preprimary educational institutions employed 135 teachers to serve some 1,201 children. The preprimary institutions are concentrated, as might be expected, in urban centers. Privatizing pre-elementary schooling would free average salary obligations of So. Sh. 92,205 per year, protect the government from potential rapid growth in demand for this service in urban centers, and free classroom space in precisely those areas which suffer most from overcrowding. In addition, it would relieve the government of the burden of providing services to those

parents who can best afford them, while being unable to extend the services to those parents most in need of financial assistance.

Redundancies within the system are implicit in the payment of full salaries to teachers who do not carry a full six-class period teaching load and in teacher/class ratios exceeding one. The salaries of teachers, who because of narrow specialization, teach fewer numbers of classes, should be prorated to reflect this discrepancy. In urban areas, a specialist can be shared among schools. Where this is not possible in remote areas, the teacher should be provided with programmed teaching materials. Overspecialization combined with the practice of assigning teachers to classes rather than to numbers of students has resulted in average teacher/class ratios of 1.5, 2.0, and 1.6, respectively, in elementary, intermediate, and general secondary institutions. Using the MOE defined optimal class size of 40 students as a base, the system in 1983/84 had an excess of some 4,804 teachers.

In the light of the need for quality enhancement at the primary level, growth at the secondary level could be restrained and resources earmarked for secondary schooling reallocated to teachers' salaries. This is particularly true of growth in the vocational/technical subsector. Vocational/technical schools are inherently expensive because of their requirements for both small student/teacher ratios and large equipment and maintenance budgets. In addition, the GTZ study reported that neither the quality of the graduates nor the market demand justify expansion during the next planning period. If the concern is for unemployed primary leavers, it might be preferable to provide them with on-the-job training in community development projects.

Using average salaries at the primary and general secondary level as a base and 1983/84 teacher counts, increasing average primary and secondary teachers salaries to So. Sh. 2,850 and So. Sh. 4,325 per month would cost the government an estimated additional So. Sh. 312.5 million annually (these costs are illustrative only as they are based on average salaries and total number of teachers rather than full-time equivalents). Reinvesting preprimary

salaries in primary and secondary, eliminating excess teachers (1+ teachers per 40 students), and changing the salary base from 12 to 10 months reduces this figure to 136.6 million. While this remains a sizeable increase in recurrent costs, these costs, over time, will be compensated for by decreases in:

- lost investments in teacher training for teachers who turn to other occupations;
- lost investments in students who leave school before acquiring permanent literacy, and
- declines in the quantity of resources necessary to produce each increment in student achievement.

2.3.2 SECOND PRIORITY: Revise School Organization Structures: Recommendations 5-9

Recommendation 5: Strengthen the instructional leadership in the schools

Recommendation 6: Change practices governing the allocation of teachers within schools

Recommendation 7: Expand the number of multigrade classrooms, particularly in remote areas

Recommendation 8: Increase the effective length of the school year and the school day

Recommendation 9: Establish Community Advisory Boards

Description. The success or failure of a school is often attributed to the quality of the leadership provided by the headmaster. Exercise of leadership is a complex phenomenon requiring the authority to reward or penalize, as well as the ability to inspire. Low salaries, the short probationary period, and promotion on the basis of seniority alone combine to rob headmasters of much of their authority. At the same time, lack of training prevents them from fulfilling their central role, that of instructional leader of the school. It is recommended that current efforts to provide ongoing training to these individuals continue. A second suggestion (and one developed for teacher training in Chapter 4 of this report) is to provide headmasters with a simple checklist of teacher and student behavior patterns which can be used when they observe their classrooms. This will enable them to monitor classroom interactions with a view towards helping teachers improve their classroom

management skills. For instance, if the headmaster observes that a teacher simply lectures for the whole period, he can suggest that question and answer segments be included or that the teacher try dividing the students into groups for different activities.

Currently, the number of teachers needed in a school is computed by first determining the number of classes needed. This figure is obtained by dividing the number of students by what government considers the optimal class size (40). Once the number of classes needed is known, it is multiplied times the number of required periods per week (36). Since teachers are responsible for fewer than 36 periods a week, the number of teachers exceeds the number of classes. For example, an elementary school with 320 students will typically have two streams (eight classes), with 40 students in each class. Since students have six periods a day for six days a week, 288 periods must be covered. With an average elementary teacher load of 21 periods per week, the school requires 14 teachers. As noted earlier, the number of teachers per class is greatest at the intermediate level (2.0) and almost the same at the elementary and secondary levels (1.5, 1.6).

There are apparently several reasons for this lack of correspondence between the number of teachers and the number of classes. First, the salaries are so low that it is felt that teachers cannot be asked to carry a full teaching load. Secondly, not all teachers are equipped to teach the number of subjects which would amount to a full load of six periods a day. Third, time is needed to correct students work and prepare for class. Fourth, many teachers are not considered to have the health required for long hours of teaching. As a consequence, all teachers except those teaching a double shift are paid as full-time teachers. Part-time teachers are actually full-time teachers who receive extra pay for teaching one or more additional classes in a second session or for teaching adult education classes.

While preparation and correction time is a problem worldwide, only recently have teachers in systems in the more developed countries been awarded

in-school preparation time. In almost all countries, teachers, as well as other professionals, are expected to do work outside of school hours as necessary. There are two reasons for this. The first is that the school day is usually shorter than the average workday, five as opposed to eight hours. The second and more important reason is cost. It is extremely expensive to operate schools on the basis of more than one teacher per class. In the absence of effectiveness data to justify such an expenditure, it is recommended that teacher training institutions prepare students to teach a wider variety of subjects (see Chapter 3.0) and that wherever possible, trained teachers be asked to assume a full teaching load of six periods per day and 36 periods per week.

Assignment of teachers to numbers of students rather than classes poses special problems in areas where the dropout level is high or where the population density is low. In both situations, there may be fewer than 40 students in a particular grade. A time-honored way of addressing this problem is by multigrade teaching.

In remote districts in particular, multigrade organizational techniques, including "the one room schoolhouse," are now used, but should be expanded to increase immediately the number of grades offered in incomplete schools. It should be cautioned that, to work well, multigrade teaching requires trained and experienced teachers, or programmed teaching materials (Chapter 4.0). Students at each grade level could share textbooks, but would require reading materials, exercise books, and pencils; supplies often not available in classrooms at the present time.

The organizational skills involved in multigrade classrooms can be taught readily to teachers and reinforced through the programmed teaching materials. The change from single grade to multiple grade teaching in Somalia is not as great as it would be in countries where teachers have little experience in teaching mixed age groups.

increased salaries and rewards and proper support are essential if the effective length of the school year and the school day are to be increased. At the present time, the school calendar and curriculum is based on a 38-week school year and 240 minutes of instructional time per day (six periods at 40 minutes each). The new primary curriculum, scheduled for implementation in grade one next year, is based on the addition of a seventh period each day and a one week increase in the school year.

A number of reports have indicated, however, that schools are actually in session for only 21 to 26 weeks a year and that there is widespread variation in the length of the school year and day within and among regions. These variations are not surprising and, in fact, have been a feacure of almost all school systems in their developmental period. There are, however, strategies that can be used to ameliorate the situation. The first, the improvement of teachers' salaries, has already been discussed. The important point here is that as salaries are increased teachers will have less need for second jobs. A complementary strategy, and one suggested by the MOE Planning Department, is adapting the school calendar in different regions to adjust for the natural variability in employment cycles. Thus, vacations in agricultural regions would be scheduled during harvest and planting seasons. Similarly, in regions or districts where the climate is unusually hot, the school day might start earlier or classes might be held in both the early morning and late afternoon. These measures would help lower students' (and families') opportunity costs for school attendance and thereby decrease absenteeism and attrition. As the Planning Department rightly points out, information on communities in different regions is necessary to identify appropriate school terms. Collection of these data and statistical data on the number of days schools are closed, teacher attendance, and student attendance are important. These data are essential for planning the appropriate incentives for participation in schools.

The first four recommendations in this section deal with increasing the efficiency of the internal school organization. The last one deals with the relationship of the school to the community. At the present time, schools are connected to the community primarily by informal channels often mediated by the District or Regional Education Officer, rather than the Headmaster. Thus, in many areas, community leaders are not informed of either the successes of the school or the problems that it faces. This is particularly true in large urban areas and in those rural areas where the Headmaster and the teachers are new to the village. Yet in a very real sense, the school is dependent on the community and its leadership. Good community support and involvement have been found to lead to higher attendance rates, lower attrition, and willingness to assist the school and teachers in a wide variety of ways. Thus it is essential to create formal mechanisms which integrate the school into the larger community. Only in this way will the school come to reflect the values and preferences of the particular community, as well as those of the central government.

Strong community ties are most easily accomplished through the formation of Community Advisory Committees. Such committees can either be elected or appointed. The members should serve overlapping terms of two, three, or four years so that expertise is not lost as terms end. The committees would work with the headmasters to review the status of the school and to discuss problems and needs at least three times a year. In addition, an effort should be made to keep the larger community, particularly parents, informed of the school's activities. Where possible, headmasters and teachers should visit the parents at least twice a year to discuss the progress of the child and his or her attendance record.

Potential Problems. Many of the problems inherent in implementing this set of recommendations can be avoided if teachers are moved to full-time teaching loads at the time of the salary increase. In order to minimize negative teacher reaction to the assumption of a full-time load, salary

increases should be explicitly tied to additional teaching responsibilities.

A more difficult problem is represented by the case of the secondary teacher who wants full-time employment but who, because of over-specialization, can be used in the school only part-time. Within urban areas, this difficulty can be solved by assigning the teacher to a number of schools. Outside of these areas, teachers already in the system who want to work full-time should be given the opportunity to assume complementary responsibilities, such as teaching adults or providing inservice training in his or her area of specialization to teachers at a nearby primary school. It is important that policies governing such cases be developed in advance, and that care be taken to ensure that the responsibilities assigned to these individuals do not simply exist on paper, but are actually fulfilled. The most efficient way to resolve this dilemma would be to provide teachers with programmed teaching materials. These materials are designed to allow the teacher to learn while teaching.

In establishing community advisory committees, it is important to ensure that members are representative of the various interests in the community and that the committee's role is well defined. Within the first year or two after such committees are established, regional and district officers should make an attempt to attend at least one session a year to ensure that any Headmaster/Committee difficulties are resolved quickly.

Increases in the effective length of the school year and school day should follow naturally from the elimination of the constraints imposed by low salaries and a nationwide school calendar and schedule. In addition, formal teacher evaluations will provide an incentive for punctuality and attendance. Similarly, the provision of a salary supplement for teaching in remote areas can be expected to remove many of the obstacles to the creation of multigrade classrooms and the addition of grades to incomplete schools. The more difficult problem, addressed in Chapter Four, is supplying these "one room schools" with adequate texts and materials.

Action Steps.

1. Reduce the numbers of teachers per class. Request REOs to obtain information on the number of teachers who are teaching fewer than the number of scheduled periods. Inform the REOs that teachers leaving the system will not be replaced until all teachers are carrying full teaching loads, unless they wish to be paid on a part-time basis.

2. Upgrade incomplete schools through the use of multigrade organizational arrangements. Assign trained teachers to incomplete schools in remote areas. Provide them with adequate support materials. Request REOs to ensure that they are visited frequently by the inspectors.

3. Establish community advisory boards. Discuss the appropriateness of such boards. Request REOs to explore the possibility of such advisory boards with selected community leaders. Specify rules and regulations governing such boards based on information obtained from the regions. Request permission to implement in several districts. If the results justify it, request approval for countrywide implementation.

4. Obtain information on the appropriate school calendar and daily schedule in different regions. Obtain information on employment cycles and other potential obstacles to school attendance in the different regions. This information can be obtained from the REOs.

5. Design new school calendars and schedules. Design new school calendars and submit these to the REOs for comment. REOs through their staff should discuss the draft calendars and schedules with the school communities. Based on these comments, final adjustments to the calendars should be made and approval for implementation sought.

Alternative Strategies and Costs. None of the recommendations in this section explicitly require greater government expenditures. They assume, however, that teacher salaries are increased, additional employment opportunities are provided for remote area teachers or bonuses paid in lieu of such opportunities, and that schools, particularly in remote areas, are supplied with texts and other materials. The information necessary to design school calendars and schedules so that they reflect local needs can be obtained in a number of ways. The least costly option is to obtain the necessary information from the REOs. If this approach is considered unreliable, the collection of the information could be incorporated into the design of the study on teachers.

2.3.3 THIRD PRIORITY: Strengthen Evaluation and Support Services to Schools: Recommendations 10-12.

Recommendation 10: Strengthen the regional and district education offices

Recommendation 11: Redefine the role of the Central Inspectorate

Recommendation 12: Strengthen the Planning Division

The Ministry of Education has designed a basic framework for the support of schooling. The major tasks for the future are primarily developmental. The current infrastructure needs to be strengthened by provision of greater authority to the regions, addition of trained personnel, improved communication among the central, regional, and district offices, and further elimination of redundancy in tasks assigned to various units at the central level. While much of the infrastructure improvement will have to take place gradually, as more trained personnel and funds become available, immediate attention needs to be given to the issues raised in the recommendations listed above. The first of these is the strengthening the Regional Offices.

The REOs were designed as mechanisms for implementing central decisionmaking regarding schooling. Together with the district offices, they are the closest organization in the support chain to the school. Technically, they are responsible for seeing that schools receive the human and material resources necessary for implementation of the curriculum. Two sets of constraints have prevented REOs from reaching their full potential. The first consists of the quantity and quality of the resources placed at their disposal. In meeting the needs of schools, they have been hampered by the serious shortage of trained teachers, textbooks, supplies, vehicles, and petrol. These shortages have been exacerbated by the lack of trained staff capable of supporting and evaluating school and classroom processes.

While the role of the Headmaster is that of instructional leader of the school, the function of the inspector is to provide ongoing inservice to both Headmasters and teachers in areas including: administration, the goals and objectives of the curriculum, classroom organizational techniques, and

teaching methodologies. In addition to these responsibilities, inspectors are charged with the collection of reliable data on the characteristics of the schools.

These obligations have implications both for the amount of time inspectors spend in schools and the skills they need. At the present time, the goal is to visit schools three times a year. It is not clear how long the inspector typically spends at each school. It is that inspectors spend at least 75% of the school year in the field, visiting schools for at least one week at a time.

In order to provide the necessary support to headmasters and teachers, inspectors should be skilled evaluators, have in-depth understanding of the curriculum, strong backgrounds in education at either the primary or secondary level, and working knowledge of data collection and validation techniques. At the present time, the inspectorate is relatively undertrained in terms of its purpose. Inspectors are university graduates or experienced educators. The training program at Halane emphasizes subject content to the exclusion of firm grounding in methodology and of supervised practice teaching. The type of training needed by the inspectorate thus does not lend itself readily to short-term workshops. The foundation required for this work is a college level degree in primary education combined with classroom and school administration experience. As noted earlier, this type of degree is not yet available in Somalia. Once such a program is created, it is recommended that opportunities to enroll in it are offered first to the current cadre of inspectors on a rotational basis.

The introduction of the new grade one curriculum in November lends immediacy to the need to upgrade the inspectors in curricular matters. Consideration should be given to the inclusion of the inspectors into all workshops designed to introduce the curriculum. The new texts for the new curriculum should be supplied to them as soon as possible.

Since inspectors also serve as an important link in the information management chain, they also need expertise in data collection and validation. Deficiencies in this area do lend themselves to short courses. In the interests of efficiency, such courses should be not be general, but quite specific to the needs of the MOE Planning Department.

The second set of constraints faced by the Regional Education Officers is dictated by their limited authority. Regional Education Officers are responsible for the schools in their areas, yet they have no authority to dismiss district officers, headmasters, teachers, and inspectors. They may, however, transfer or demote DEOs. As the rules and regulations are changed, it is recommended that decisions regarding tenure and promotion be decentralized. Further, rather than simply assigning new teachers to schools, consideration should be given to providing REOs and headmasters with candidates and permitting them to make the final selection. This will become more feasible as the supply of trained teachers expands to meet demand.

The overlapping lines of authority governing the inspectorate represents yet another limitation on regional authority. Regional and District Inspectors report both to their Education Officers and to the Central Inspectorate. This double reporting subverts the major advantage of decentralization, namely, the ability to respond promptly to identified local needs. Properly speaking, the Regional Education Officers are in the best position to assess the training needs of their inspectors, and the appropriate timing of such training. Overall central coordination of such training should follow from the decisions made at regular meetings of the REOs.

These recommendations raise, in turn, the question of the appropriate role of the Central Inspectorate. In order to clarify lines of authority and to eliminate redundancy, it is suggested that the functions of the Central Inspectorate be altered. The Department might be redefined as a regional support office. The new office would undertake responsibility for:

1. coordinating and implementing short-term training exercises as requested by the REOs;

2. collecting and tabulating data for the regions for submission to the Planning Department and the Administration Division; and

3. processing special requests from the regions for additional teachers, textbooks, and materials.

The new Department of Regional Support would remain within the Division of Education Development, whose director would monitor its performance, as this cannot be done easily from the field. The REOs together with the Director of Education Development would evaluate members of the Department for promotion purposes.

The lack of data on many important characteristics of the educational system, noted throughout this report, implies no criticism of the Planning Department. The Education Statistics Yearbooks, the number of donor projects negotiated and monitored, as well as considerable efforts in other areas, attest to both a high level of productivity and excellent coordination with other Departments and Divisions. The importance of the Department's products to higher level policy decisions suggests that major investments of resources in this unit would yield high returns. At the present time, for instance, accurate cost data are not available.

The primary function of a planning department is to translate system information into the projections, analyses, and policy option papers which serve as the basis for sound decisionmaking. In this capacity, such a department serves as the focal point of the information management system. It requests data from the field, analyses the condition of education, makes projections of the resources needed, estimates capital and recurrent costs of such resources at both aggregate and per-student levels, undertakes special surveys and studies to identify the causes of specific problems, and compares system output data to the larger manpower needs of the country.

Measured against the scope of work implied in these information management tasks alone, the present staffing of the Planning Department is not adequate. The Department now consists of two trained statisticians (one about

to depart on study leave and the other the Director), one economist, one engineer, and several support staff who are being trained on the job. At a minimum, the size of the Department needs to be doubled. The new staff should be selected carefully on the basis of prior training. In addition, if the task of tabulating regional data were assigned to the Regional Support Department, the time of the Planning staff would be freed for the more important analytical tasks.

It is also recommended that the skills of the present partially trained staff be upgraded, staff added, and easy access to the Ministry microcomputers be provided. In order that short-term needs are not sacrificed to long-term goals, it is recommended that technical assistance be sought in this area. The advantage of such assistance is that a special program could be designed which is appropriate both to the needs of the staff and to the type of information the Ministry requires.

Potential Problems. Implementation problems related to this set of recommendations are most likely to be in the area of costs. The costs, as well as alternative strategies for funding, are described below.

Action Steps.

1. Decentralize personnel decisions. Transfer authority to the REOs for decisions related to teacher tenure, promotion, and dismissal with cause.

2. Hold a special conference for the REOs. The purpose of such the conference would be: a) to assess training needs of their subordinates (inspectors, accountants, DEOs); b) assess the transportation needs in the regions; c) discuss the possibility for, and the mission of, a Regional Support Office. Implement decisions taken at this meeting.

3. Increase the capacity of the Planning Office. Request necessary authorization to hire additional trained staff. Request technical assistance for intensive training in information management skills.

Alternative Strategies and Costs. The costs implied in this set of recommendations fall into three categories: transportation costs; conference costs; and technical assistance costs. Lack of transportation has been a major obstacle to the functioning of the Regional Offices and to field visits

by the Planning Department staff and other Ministry Officials. With regard to the REOs difficulties, alternatives to travel by car need to be explored. Similarly, cost savings could be increased if the inspectors stayed with the headmaster or in the school itself during visits. These possibilities need to be explored in-depth with the REOs. Another strategy worth consideration is the wholesale purchase of used vehicles and resale to individuals through salary reduction over a long period of time. In other countries, this approach has been found to prolong the life of the vehicle, usually a motor-bike, while at the same time lowering government cost. This, as many other suggested strategies, is dependent, of course, on an increase in educational salaries to at least the cost of living.

In the case of an REO Conference, the costs are well known since a number of workshops have been held lately. If held in Moqdisho, only 16 of the REOs would require transportation and per diem. Since the Conference could be held in the Ministry, and no lecturers would be involved, the costs of a three-day meeting would be approximately So. Sh. 44,800 (at an average cost of So. Sh. 1000 per person for travel and So. Sh. 300 per day per person per diem).

While the costs of technical assistance are much higher, they are also an appropriate area for donor support. Assistance in developing an information management system uniquely tailored to Somalia's needs is an activity likely to yield immediate and important benefits to efficient management of the school system.

2.3.4 Contribution to External Efficiency

Improving school management has a significant, but indirect, effect on external efficiency. It addresses questions not so much related to system outputs as to system inputs; how to organize scarce resources in such a way as to have a maximum affect on enhancing the teaching-learning process. To the extent, however, that educational resources are supplied to schools and used to their best advantage in classrooms, marked improvements in external efficiency can be expected.

External efficiency measures the fit between the quality of school system leavers and the demands of the institutions or employment they enter. At the present time, secondary schools serve mainly remedial functions. Improvements in the quality of the primary leavers would therefore immediately result in upgrading these institutions. A number of recent reports, including both the Sector Assessment and the GTZ analysis of secondary vocational/technical, indicate that market demand for high quality secondary graduates is also not being met. As a result, both government and the private sector invest considerable funds in basic training; investments which represent foregone opportunities for providing other government services or private sector expansion.

The relevance for the improvement of primary education to breaking this expensive remedial cycle cannot be overstated. The present opportunity to increase quality at this level, afforded by low growth in enrollments, can only be ignored at great social cost. At the same time, investments in primary schooling are apt to yield enduring benefits both to individuals and the society at large.

2.3.5 Contribution to Internal Efficiency

Internal efficiency is a function of the cost of resources of a given quality, the intensity of resource use, and student attrition and repetition. The recommendations for increasing the productivity of teachers and strengthening support services to schools and teachers have as their goal raising the quality of one of the most important inputs in education; while revisions in the organization of schooling are designed to increase resource-use ratios and thus lower the cost of investing in quality.

Greater efforts by teachers in the classroom, combined with the elimination of incomplete cycles and greater community and parent involvement, have been shown to have profound effects on student attrition and repetition rates. By the same token, where there is little continuity between what is

valued at home and in the school, the student is forced to make a difficult decision. The choice is resolved very quickly if teachers are often absent or uninterested.

2.3.6 Contribution to Equity

The recommendations address two equity issues. The first of these issues is teacher equity. To the extent that differential rewards are given for differences in teaching burdens and salaries approach the cost of living, equity will be enhanced. The second issue, and one that has received much government attention, is student equity. The recommendations for providing incentives for remote area teaching and completing less than full cycle schools by use of multigrade teaching, if implemented, would do much to reduce the disadvantage of attending school in a rural area.

2.4 SUMMARY

This section of the report has provided recommendations for improving school management in three areas. In order of priority, they are: increasing the incentives for teacher productivity; revising school organization structures; and strengthening the support services to schools. Raising the salaries and non-monetary rewards of teachers forms the basis for all subsequent recommendations. All are tied to it either explicitly or implicitly. If some improvements are not made in salaries in particular, the other recommendations will fall short of their intended effect. The costs of raising salaries could be partially financed by strategies discussed in this chapter.

3.0 IMPROVING THE QUALITY OF TEACHER TRAINING

3.1 INTRODUCTION

Teachers in the educational systems of developing nations perform the significant functions of perpetuating societal heritage and simultaneously energizing human resources toward social progress. Somali teachers are a central element in the formal education of the nation's human capital. It is clear that the level of education in Somalia cannot rise far above the quality of the teacher in the classroom, and that the selection and training of these teachers are of significant social concern. Every effort, therefore, must be made to produce the best teachers the nation can afford. This is clearly the intent of the Ministry of Education. At the same time, however, the Ministry must consider how best to allocate existing and future resources, human and fiscal. The limited absorptive capacity of the educational enterprise in Somalia dictates that long-range plans for achieving sector goals be built upon immediate steps which can be financed within the present limited share of the national budget available to education and the level of external assistance likely to be available in the near future.

This chapter contains recommendations for improving the quality of primary and secondary teacher training. These recommendations support the long-range goal of building an adequate educational system for Somalia. Arguments for greater national investments in education to realize this system are based upon the need for an educated citizenry as the foundation of national development. This study also examines possible alternative steps for improving the quality of instruction without substantial investment in teacher training programs. Recommendations are made in seven priority areas with specific implementation strategies subsumed.

These recommendations are outlined below for the reader's convenience. Each recommendation is then discussed in detail in this chapter.

FIRST PRIORITY: Improve The Quality of Primary Teacher Training College Programs.

Recommendation 1: Provide a Four-Year Primary Teacher Training College Program to Include One Year of Supervised Practice Teaching.

Recommendation 2: Design and Implement a Competency-based Primary Teacher Training College Program for Implementation of the New Reform Curriculum.

Recommendation 3: Train Primary Teacher Training College Faculty to Implement the New Competency-based Primary Teacher Training Program.

SECOND PRIORITY: Improve the Quality of Primary Teacher Inservice Training.

Recommendation 4: Design and Implement a Competency-based Upgrading Program for Existing Undertrained Primary Teachers.

Recommendation 5: Design and Implement a Competency-based Inservice Program for Future (Secondary School Leaver) Primary Teachers.

THIRD PRIORITY: Improve the Quality of Secondary Teacher Training.

Recommendation 6: Provide a Four-Year Secondary Teacher Training Program with One Year of Supervised Practice Teaching.

Recommendation 7: Design and Implement a Secondary Teacher Training Program with Emphasis on Training for Professional Educators.

Recommendation 8: Train Secondary Teachers At Lafoole College of Education in the Use of Existing Somali Secondary Texts and Instructional Guides.

Recommendation 9: Strengthen the Somali Language Program and Text Production Unit at Lafoole College of Education.

FOURTH PRIORITY: Improve the Quality of Secondary Inservice Teacher Training.

Recommendation 10: Design and Implement a Competency-based Inservice Program for Secondary Teachers.

FIFTH PRIORITY: Develop a Comprehensive Policy for the Use of English in Primary and Secondary Teacher Training Programs.

Recommendation 11: Strengthen English Instruction at the Primary and Secondary Level with Emphasis on Developing Reading Skills.

Recommendation 12: Design and Implement Instruction for English Reading Skills at Lafoole College of Education.

SIXTH PRIORITY: Decentralize Primary Teacher Training.

Recommendation 13: Develop and Implement a New Primary Teacher Training College at a Central Location Prior to Creating Regional Primary Teacher Training Colleges.

SEVENTH PRIORITY: Assign Only Trained Teachers to Primary and Secondary Schools.

Recommendation 14: Assign National Service Participants to Appropriate Social Work Other Than Professional Teaching Positions.

3.2 CURRENT STATUS

The Ministry of Education (MOE) recognizes the importance of teacher education for improving the quality of schools in Somalia. Improving and strengthening teacher education is a priority for MOE and important steps have been taken to better prepare teachers for their work and better support those presently teaching in schools throughout the country. Both the program for training secondary teachers at Lafoole College of Education and the program for training primary teachers (previously located at Halane Primary Teacher Training College) are scheduled for revision. MOE staff are now engaged in preparing new pre- and inservice programs which will reflect both the new curricular developments now underway and the perceived need for long-term development of a professional teaching corps in all areas of Somalia.

The Somalia Education and Human Resources Sector Assessment (January 1984) reported four major conclusions in the area of teacher training:

- Emphasis should be placed on improving the quality of instruction before expanding enrollment or facilities.
- Attention should be given to teacher recruitment, selection, and training in order to improve the quality of teachers.
- Attention should be given to language policies which affect the internal efficiency of teacher training programs.
- Coordination among government agencies responsible for teacher training is necessary to reduce inefficiencies.

From these four conclusions, the Sector Assessment stated six specific recommendations in the area of teacher training:

1. Extend secondary teacher training programs to three years.

2. Make primary teacher training a post grade ten activity.

3. Revise teacher selection procedures to avoid depleting the ranks of high-quality primary teachers.

4. Require all teachers to have formal teacher training.

5. Develop an effective policy of English use and training.

6. Train teachers to teach at several grade levels and across several subject areas.

The present study derives from the first of the Sector Assessment conclusions (improving the quality of instruction). The priorities and recommendations outlined above further deal with the issues raised by the Sector Assessment, although they are not necessarily identical in approach. The strategies outlined below each recommendation in this document are a further step towards implementation. In some areas, the government has already taken steps to implement the recommendations of the Assessment (for example, primary teacher training has been designated a post grade ten activity), and these events are discussed where appropriate.

In the area of primary and secondary teacher pre- and inservice teacher training, major departures of this study from the conclusions of the Assessment occur in the following areas:

- Priority for establishing primary teaching as a recognized profession with adequate training, support, financial rewards and career advancement paths.

- Priority for revising the training of secondary teachers to ensure that they are prepared to be professional educators capable of teaching many levels and content areas, not just one area of specialization at one grade level.

- Priority for producing Somali language materials for teacher training, to allow teachers to be trained in the Somali system in which they will teach, and to ensure the continued development of Somali as an adequate language for technical purposes.

- Priority for establishing English programs at intermediate and secondary levels specifically designed to develop English language reading skills to a high level. These programs should not have primary objectives of speaking and listening skills. They should focus on developing the specialized skills of reading English in order to prepare students for the later demands of the system. Such programs could reduce the inefficiencies of using high-level

English language texts with students who read only at a low level in the language. This occurs at present not only in teacher training, but in vocational/technical and university training as well.

The Sector Assessment noted that the quality of instruction in Somalia's primary schools depended in part on the competence of many teachers who had not participated at all in the formal teacher training system. An estimated two-thirds of primary teachers presently teaching in the system may not have received any training in primary teacher training centers. The current MOE emphasis on developing a systematic inservice training program for teachers is thus as urgent for improving school quality as the production and distribution of the new instructional materials. No matter how inadequate the preservice program at Halane was, it should be recognized too that training was not available to the majority of primary teachers.

A recent MOE report analyzing the curriculum at the teacher training program at Halane (Appendix Three) emphasizes the lack of methodological training provided for primary teachers. The report points out two reasons for this situation:

- Primary school graduates were admitted to the primary teacher training program. This practice originates from the period of system expansion and the resulting demand for many new primary teachers. Its long-term effect on the development of primary teacher training programs has been to force the curriculum towards secondary level subject area content in an effort to compensate for the trainees' lack of a secondary education. The Halane program became an attempt to strengthen subject area skills, not a program for producing professional primary teachers.

- The lack of staff lecturers trained in primary level methodology is also noted as a severe problem in the former primary teacher training course. The staff of the primary training center have been drawn from the graduates of the Lafoole College of Education and have not been prepared for teaching primary level methodology. Throughout the entire system, the teaching of primary grades has not been regarded as a profession in any way equal to teaching secondary or postsecondary levels. As the Sector Assessment pointed out, the teaching of primary grades appears as only a way-station to better positions. Those accepting primary teaching positions have been aware that they could leave them after three years service by passing the teacher's examination and being admitted to Lafoole College of Education for training as a secondary school teacher. The development of a strong professional corps of primary school teachers thus has been blocked by inadequate and inappropriate training, absence of career path opportunities within the primary level, and the existence of a strong incentive to leave primary teaching after a short period.

The MOE is now addressing these problems and has taken the decisive steps of admitting only secondary school graduates to primary teacher training, a step which will have a strong effect on improving that program. Discontinuing the training at the Halane College and undertaking planning for a new primary teacher training curriculum is another significant step towards improving the quality of teacher training. The issue of primary teachers leaving service to attend Lafoole secondary teacher training after three years deserves further attention by government planners. If no other career path is open to primary school teachers, this professional objective will continue to influence primary teacher training programs--that is, teachers will demand more subject area skills to prepare themselves for the evaluation examination and Lafoole secondary teacher training, and have less interest in primary level professional training which they will continue to regard as temporary employment.

3.3 RECOMMENDATIONS

3.3.1 FIRST PRIORITY: Improve the Quality of Primary Teacher Education Programs: Recommendations 1-3

Recommendation 1: Provide a four-year primary teacher training college program to include one year of supervised practice teaching

Recommendation 2: Design and implement a competency-based primary teacher training college program for implementation of the new reform curriculum

Recommendation 3: Train primary teacher training college staff to implement a competency-based primary teacher training program

Description. Poor teacher quality remains the greatest constraint on the effectiveness of the primary system in Somalia. A trained corps of professional school teachers is required to improve the quality of primary schools. Due to both the recent colonial past and the exigencies of rapidly extending the modern system, a corps of adequately trained primary teachers does not now exist throughout the nation. Until such a corps is created, other efforts to

raise school quality will face serious constraints. The factors which led to the present situation are well-known:

- During the colonial period, secondary schools were developed for children of the privileged, but a public primary school system existed only in limited areas of the British and Italian colonies. At Independence, therefore, no primary system, no training institutions, and no tradition of professional primary school teaching existed.

- Following the Revolution and extension of literacy in the newly-devised Somali script, the demand for primary school teachers resulted in the hiring of new teachers with only primary school education and a one-year training program focusing on subject area skills, not professional teaching skills. Some primary teachers recruited during this period of system extension did not possess even these qualifications. Priority was given to placing some educational resource in all areas of the country, with hopes of improving the system once it was in place.

- The depressed economic conditions in Somalia and subsequent currency evaluations have resulted in primary teachers salaries so low that teachers are forced to find additional work, and so are frequently absent from classrooms. Frequent teacher absenteeism, lack of texts, and the low level of knowledge and skills of existing primary teachers in general have resulted in a steady decline in the quality of primary education. This is directly evidenced by the declining enrollment rate for primary schools throughout Somalia.

The MOE is aware of these problems and their consequences for the country. Teacher training is a current priority and a special teacher training task force has been created. Data collected by the Ministry continue to indicate wide variations between the availability of trained teachers in urban and rural areas. Eight regions report a student ratio below 30.1 and two regions report a ratio above 55.1, indicating these differences. Halane Primary Teacher Training College in recent years has reported that it has not been able to fill its quota of students from the remote Northern districts. The primary training course previously given at Halane has been recently reviewed by the MOE and recognized as inadequate. MOE has taken a number of important steps to remedy this situation:

- Only secondary school leavers will be accepted into primary teacher training programs. This will avoid the problem of trying to develop basic subject area skills while training primary teachers. It will contribute greatly to raising the status of primary school teachers by putting their professional training more on a par with the training received by secondary teachers, and will end the situation of sending very young inexperienced teachers to teach students very close in age and educational level.

- Halane Primary Teacher Training College has been closed as a primary training center for primary school leavers. No decision has yet been made about reopening Halane as a primary training center for secondary school leavers. At the present time, primary teacher training is being conducted through an experimental program at the Polytechnic Institute in Moqdisho. The first group of secondary graduates began their primary teacher training studies there in February 1984. After a course of seven months, 105 were graduated and assigned to secondary teaching positions. The second class in this experimental program began studies in March 1985, and will complete their ten-month course at the end of that year. The primary teacher training course is now designated the Advanced Teacher Training Institute. The system at present faces a number of important decisions:

  - What will be the duration of future primary teacher training programs?
  - Where will they be located?
  - How can the new primary teachers be trained to implement new curricular improvements?

Underlying all of these questions, however, remains the issue of who will become a primary teacher and how long that person will choose to remain in that situation. The decision to assign only secondary school graduates to the program has been made, and offers primary teacher training important new possibilities for improvement. The question now facing the system is how to convince secondary school graduates that primary teaching is a real career choice. It has not been a choice for secondary school leavers in the past. They might progress to the university after only a year of National Service teaching. There they might choose (or be assigned to) Lafoole College of Education which would qualify them to become secondary school teachers. As primary school teachers earn considerably less than secondary teachers (starting monthly pay is So. Sh. 530 for primary [illegible]d to So. Sh. 1400 for secondary), only primary school graduates--who could, in turn, qualify for Lafoole training after three years' service--have trained to become primary teachers.

Unless this issue is addressed, the present wasteful system of attempting to provide quality pre- and inservice training to primary teachers who do not intend to remain at their jobs will continue.

There are a number of alternatives for locating the Primary Teacher Training College at present:

- it might remain a separate institute administered by MOE,
- it might be absorbed into Lafoole College of Education under MCHE, and
- Lafoole might be removed from MCHE and combined with the Primary Teacher Training College to form a new Teacher Training Institute under MOE.

The important issue at present is that the primary teacher training should be made of equal importance with secondary teacher training. This dictates that the primary teacher training degree have the same value as the degree for secondary teacher training. The SNU College of Education might offer both primary and secondary programs, or independent teacher training colleges might be decentralized throughout the country offering both primary and secondary teacher training.

A policy of decentralization has been declared and the Government intends to open a primary teacher training college in the remote Northwest region. This would provide access to many prospective teachers who cannot now come to the Banaadir region. It will also permit a reduction in training costs by removing the need for boarding facilities at the training centers. A school constructed in Hargeysa by the EEC in 1969 as a primary teacher training center, but subsequently used as a secondary school, will become the site for the new primary teacher training center. MOE plans also call for regional primary teacher training centers to be operated at Moqdisho, Hargeysa, Gaalkacayo, Baydhao, and Kismaayo.

The design of a new primary teacher preservice curriculum will allow the MOE to focus on the new curricular materials it has recently developed and to train new teachers to ensure that they will be effectively used in the classroom. A national curriculum which outlines objectives, methodology and activities does not exist at the present time and the instructional materials now available must define the school curriculum for teacher training.

MOE has developed a Primary Teachers Training Manual as the basis for training primary teachers in the use of new materials and in the new curricular approach of a less authoritarian, more student-centered approach. This material could be used in a competency-based training course which specifically identified the tasks that primary teachers must perform in the classrooms throughout the country.

New materials currently being produced by the MOE include the New Reform Curriculum texts, diversification texts and the Curriculum Enrichment materials. The curriculum enrichment approach provides teachers with an alternative to the traditional lecture or copy method of instruction. Teaching activities built into the enrichment series include teaching with pictures, drama, drawing activities, and educational field trips. Primary teachers who receive effective preservice training in these activities, including demonstrations and practice teaching, are far more likely to implement the program than those who are only told about the purposes of the program.

Potential Problems. The extension of primary teacher training to four years will require the design and implementation of a new training curriculum as well as the retraining of faculty and further development of training materials. This presents an opportunity for incorporating training in the New Reform Curriculum and the recommended Programmed Teaching methodology (Chapter 4.0). The design of the new primary teacher training curriculum should be coordinated with the new instructional materials as they are created so that primary teachers are trained in the use of actual classroom materials and gain classroom experience using those materials during the recommended year of supervised practice teaching.

Coordination of Fourth Year Supervised Practice Teaching. The fourth year of training should consist of supervised practice teaching experience to prepare the teacher for the classroom. This program will require coordination between the Primary Teacher Training College (wherever it is located), the

MOE, and the schools where student teachers are assigned. Further coordination with Regional Education Offices for supervision of the student teachers will require both. This experience should consist of two parts:

1. supervised teaching in an urban school with complete grade levels; and

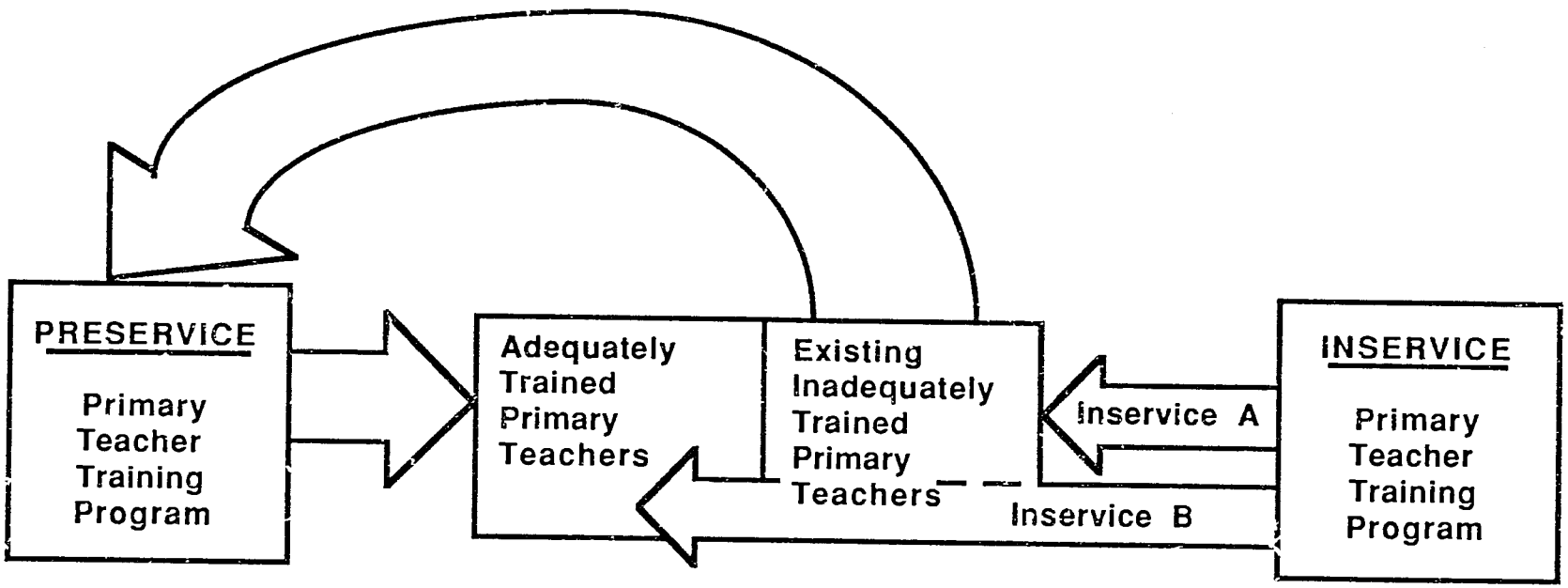
2. supervised multigrade teaching in a rural school with incomplete grade levels.

This experience would better prepare teachers for the common Somalia situation of multigrade classrooms outside the urban areas, where primary teachers should be competent to teach a variety of grade levels and subjects to support the learning of all students within the primary grades. It may be assumed at present that many students are not provided educational opportunities because accessible schools have incomplete grade levels.

Reluctance of Teachers to Train for Four Years. Many secondary school leavers may be reluctant to attend a four-year primary teacher training course, given the present level of primary teacher pay and professional status (Chapter 2.0). The present pay schedule for primary teachers is not equal to that of secondary teachers. Teachers would be asked in effect to train for an equal time in preparation for a job of lower pay. In addition, secondary teacher training is located at Lafoole College of Education, and thus carries the prestige of a Somalia National University Degree. Students now undergoing primary teacher training plan to attend the Lafoole College of Education after three years of service (this is given as a justification for the use of English in their training), and to advance from there to better paying secondary teacher or private sector positions. The number and quality of students attracted to primary teaching will only increase with better pay, better training, and better teaching conditions--all of which will contribute to establishing primary teaching as a profession. Chart 3.1 illustrates the possible career paths which might be provided primary teachers. The recommended four-year, postsecondary Primary Teacher Training College produces qualified primary teachers for the schools. These qualified teachers are

CHART 3.1

Recommended Training for Primary Teachers



supported by a systematic inservice program and may seek advancement to Headmaster or District or Regional posts. The untrained and undertrained primary teachers currently in the system should receive an upgrading inservice program and may then attend the College to receive a degree in primary education.

At the present time, declining school enrollments do not demand great numbers of teacher trainees. The small numbers entering the recommended four-year primary training program for secondary graduates allow planners an opportunity to concentrate on program design and materials for implementation of a quality program.

Reluctance of Teachers to Go to Rural Areas for Practice Teaching. The Ministry has experienced difficulty in assigning new teachers to schools in remote areas. Many students may not wish to go to remote areas for the supervised practice teaching recommended in their fourth year. It is a legitimate government concern that many young Somalis are attracted to the urban life in the Banaadir region, and are thus more removed from the nomadic roots of Somali life. The years of the national literacy campaign are now remembered vividly by many young Somalis as the time they went to live in remote areas, many of them initially hesitant and misinformed about the life away from the capital region. Clearly young teachers can profit from teaching in rural areas as much as the students and communities in those regions can profit by their presence. Recommendations made elsewhere in this study (Chapter 2.0) discuss this problem and suggest incentives to increase the willingness of new teachers to accept rural teaching assignments. The incentive of certification should be strongly enforced in the case of rural practice teaching, with no exceptions allowed.

Action Plan. A suggested action plan is provided in this section for implementing the four recommendations in the priority area of primary teacher preservice training. This plan contains possible steps which may be modified as data is gathered during implementation activities.

Design of the Four-Year Competency-based Curriculum. Competency-based training programs focus on the acquisition of specific competencies. Programs include a set of learning objectives that are stated so that, when accomplished, they can be observed in the form of specified learner behaviors or knowledge. Learning activities are designed to assist each student in acquiring at least the minimum levels of competence. Learning objectives are presented to learners as they begin a learning experience. Learners know in advance the levels of mastery to be used as criteria of successful achievement. Such criteria are always explicit and based on the specific objectives that contribute to the competencies being learned. Some common features of competency-based programs are self-pacing, modularized learning experiences; learning resource centers; faculty teams; field experiences; personalization strategies; and communication facilities (which may be as simple as bulletin boards). Competency-based teacher training is further discussed in Chapter 4.0. The four-year curriculum should be based upon the New Reform Curriculum now being designed and train primary teachers to perform the tasks necessary for teaching in the actual conditions of primary schools in Somalia. To identify the competencies needed, a task analysis should be undertaken. This analysis will result in goals and objectives directly related to the performance of primary teachers in the national education system. A competency-based curriculum may then be developed with appropriate instructional materials to enable students to demonstrate competency in the identified areas. Action steps for developing a competency-based teacher training curriculum are detailed in Chapter 4.0.

The curriculum developed by the former primary teacher training program at Halane is not appropriate for the new entrants. That curriculum was designed for primary school graduates. Current entrants are secondary school graduates and do not require the subject area skills remediation which formed the core of the earlier program. The objectives of the four-year training course should now change from developing the subject area skills of the

teachers to developing the professional skills needed to teach effectively in the environment of Somali primary schools. Graduating teachers should be thoroughly familiar with both the methodology and the content of all primary subjects and should be competent to teach all of them in a multigrade class, the most common teaching situation outside urban areas.

The persistent conception of teacher training as subject area specialist training--with the related problem of producing only specialist teachers who wish to teach only one subject--is common to many countries. Often associated with this idea is the preference for theoretical study rather than practical training. These ideas ultimately derive from elitist colonial systems and undermine national goals of creating a professional corps of dedicated primary and secondary teachers.

The MOE has made much progress towards creating a new primary teacher training curriculum. An MOE review of the old Halane curriculum documented its inadequacies, and a new training manual has been produced for primary teachers, The Manual for Professional Studies Course for Primary Teachers Training Colleges in Somalia (October 1983).

Section One of the manual presents an introduction to field of education and includes chapters on Philosophy of Education, Historical Development of Education in Somalia, African National Philosophies of Education, Educational Psychology, The Learning Process, Research in Education, and Sociology of Education.

Section Two deals with the specific content of the Somali curriculum in the primary schools and includes chapters on The Process of Curriculum Development, Primary School Curriculum, Syllabus and Schemes, and Primary Method and Learning Techniques. Within each of these chapters, training objectives are clearly stated, presentations are closely related to the experiences of the students in Somalia, student input is elicited, and relevant exercises are provided following each topic. This manual provides a good basis for developing materials for a four-year curriculum for primary

teacher training. It contains a practical introduction to the foundation areas for new teachers and to the concepts of the new child-centered curriculum. This training will provide primary teachers with an alternative to an authoritarian teaching style. It avoids the two problem areas of the previous training program: emphasis on subject area skills remediation for teachers, and a completely theoretical approach to the role of the teacher. The manual was developed by a workshop at the Curriculum Development Center and is available in Somali. It could also be used for developing inservice upgrading courses for primary teachers now in schools with little or no training.

Planning and Implementation of the Senior Year Supervised Practice Teaching Component. The addition of a supervised one-year practice teaching component to primary teacher training will provide an opportunity for students completing the Primary Teacher Training College to apply their studies in the context of a Somalia classroom. This practice teaching should be coordinated to allow experiences in both urban and rural areas and in incomplete-cycle schools. These experiences would prepare new teachers to use the available instructional materials in the most effective way. Such supervised training would reduce teacher frustration and, when combined with better inservice and salary level, reduce teacher turnover.

A technical advisor for one year is recommended to assist government planners in specifying objectives for the competencey-based primary teacher training course, developing appropriate Somali language materials at the Curriculum Development Center, training faculty to implement the new program, and establishing the fourth year supervised practice teaching program. This assignment of a technical advisor would be a suitable activity for a donor agency in support of improving the quality of primary education.

Alternative Strategies--Programmed Teaching Technology. The new curricular materials now being developed by the MOE Curriculum Development Center for primary grades provide instructional guides to assist untrained and under-

trained teachers. These materials could be adapted to programmed teaching materials with little additional investment. The materials are reviewed in Chapter 4.0 of this study and a detailed strategy is presented in that section for this process. Programmed teaching provides the advantage of immediate improvement in the quality of instruction available to children in the classroom without the substantial investment and recurrent cost obligation necessary for implementing the long-range recommendations for system improvement described here. Cost considerations for this strategy are discussed in Chapter 4.0.

Contribution to External Efficiency. The low quality of the primary education system, improvement of which is the current priority of the MOE, denies students adequate educational opportunity to acquire the basic skills needed. Changes in the quality of primary teachers for the national education system can be assumed to contribute to the external efficiency of the primary education system. Teachers are currently being placed in primary grades with inadequate training and are thus unable to provide effective instruction. The recent MOE requirement of a secondary school leavers certificate for all primary teacher trainees was an important step towards ensuring that teachers in primary grades have adequate subject area skills. The next step is to ensure that primary teachers also have adequate professional skills to teach in multigrade schools in a variety of subject areas. Only when adequately trained teachers are provided in the primary system will primary students have opportunity to receive the basic education needed to find profitable employment in public or private sectors now developing in Somalia.

Contribution to Internal Efficiency. The creation of a recognized professional career, with adequate pay, training, incentives, and career paths, for primary grade teachers underlies the other plans for increasing internal efficiency of primary education. Regular teacher attendance, performance of instructional duties, and advancement of professional skills cannot be expected of temporary personnel who are insufficiently paid and

inadequately trained to carry out their assigned tasks. These recommendations for creating a recognized profession for primary grade teachers are the basis for improving the low internal efficiency of the system.

Contribution to Equity and Access. These recommendations for improving the quality of primary teacher training support government initiatives for improving equity and access to educational opportunity through provision for more effective training of primary teachers. This recommended training will enable primary teachers to manage the multi-subject, multigrade school necessary in most rural areas of the country.

Cost Considerations

Development of Competency-based Curriculum. The development of a competency-based teacher training curriculum involves a substantial investment and would, therefore, require funding assistance.

Cost components are provided below:

1. Donor Inputs

   a. Personnel. Two Technical Advisors will be required for four months each. Somali workshop participants will require both per diem and travel expenses. Additional Somali support staff will be needed for word processing and copying of materials.

   b. Materials and Equipment. Texts and reference materials will be required, as well as other media equipment. Word processing equipment, including a high speed printer, will be needed.

   c. Other costs. R/T airfare of the two Technical Advisors, transportation in-country, per diem, postage and telephone, and duplication costs will be necessary.

2. Somali Government Inputs

   a. Personnel. CBTT Curriculum Writers develop the necessary materials working with the Technical Advisors.

   b. Facilities. Necessary office space for Technical Advisors CBTT Curriculum Writers. Classroom space for conducting training of writers.

   c. Equipment and Materials. Office supplies, media equipment for training, and all duplicating equipment and supplies.

   d. Other. Administrative support costs and vehicle operational costs.

Training of Faculty to Implement the New Program. Per-pupil costs are estimated to be similar to those provided for Lafoole College of Education in Section 1.5.

3.3.2 SECOND PRIORITY: Improve the Quality of Primary Teacher Inservice Training: RECOMMENDATION 4-5

Recommendation 4: Design and Implement a Competency-based Upgrading Program for Existing Undertrained Primary Teachers

Recommendation 5: Design and Implement a Competency-based Inservice Program for Future Postsecondary Graduate Primary Teachers

Description. No systematic program of inservice training exists at present for primary school teachers. The Ministry recognizes this as a priority (Appendix IV) area for improving the quality of primary schools and has taken steps to move towards creating a systematic program.

A Teacher Training Task Force was established in January 1984 by the Ministry to carry out the following tasks:

- prepare the curricula for all preservice and inservice teacher training courses (with general educational and professional studies course);
- plan, organize, and monitor inservice teacher training courses;
- coordinate all inputs into pre- and inservice teacher training activities;
- monitor and evaluate the implementation of teacher training courses;
- determine and maintain the academic standards of teacher training programs; and
- make all the necessary preparation for the opening of another primary teacher training center in the Northwest.

The Task Force is actively carrying out inservice training programs by developing materials, training the Inspectorate to implement the program outside the Moqdisho area, and planning for future workshops (Appendix V). It is a small unit with only five staff, including the Head of the unit, but has the potential of becoming an effective mechanism for coordinating MOE plans

for both primary and secondary inservice training. The Task Force has developed the following objectives to be achieved by the end of 1987:

- develop curricula for the preservice courses focusing on specific environmental factors of each region;
- prepare, test and evaluate trainee textbooks and tutor guides for each of the core curricular subjects;
- prepare the definitive editions on the basis of the evaluations;
- conduct seminars/workshops for the staff of the teacher training institutes to familiarize them with the new materials and methodologies;
- draw up a systematic inservice teacher training program focusing primarily on the improvement of professional skills;
- conduct inservice training courses for the inspectors of the regional and district offices, and teachers of selected districts first, later to conduct similar courses for all regional inservice coordinators responsible for inservice in their regions;
- undertake evaluation and research studies on selected teacher education issues with particular attention to rates of attrition, job opportunities, and professional incentives; and
- review the present teacher evaluation/examination system and make proposals for improvement.

These objectives represent the MOE response to the present situation of inadequate preservice and no regular inservice program for primary teachers. They need to be translated into a practical program of training and materials with attention to incentives for participants and monitoring of program effectiveness.

As part of the MOE commitment to decentralization, the inservice training program will be offered through resource centers to be established at five Regional Education Offices (REO) to serve the twenty-one regions as follows: Baydhabo, Burco, Qoryooley, Dusa Mareeb, and Kismaayo.

This plan indicates a concern for improving the quality of education throughout all regions. Its success in achieving that goal depends directly upon the quality of the inservice program, however, and that program has not been developed at this time.

Overall MOE plans for reform of teacher training (Appendix VI) call for an integrated approach bringing together the teacher training specialists, curriculum development specialists and the Inspectorate. The Chief Inspectorate will be trained by the training specialists, assisted by the curriculum specialists, to support the Regional Education Officers in training the regional and district inspectors throughout the country. This program is presently at a discussion stage and will require much development prior to implementation. Some areas identified as necessary for the program are:

- training of the Chief Inspectorate for their new role of professional trainers rather than the traditional role of administrative inspection;
- training of Regional and District Inspectors in their new roles and establishment of formal communication channels between the Regional Education Officers and the Chief Inspectorate;
- needs analysis, prioritizing of needs and identification of objectives for primary inservice training;
- preparation of inservice training materials;
- development of regional inservice training schedules to reflect the reality of agricultural, nomadic and seminomadic seasonal work patterns; and
- design and implementation of monitoring systems for ensuring the operation of the program and improving its effectiveness. The MOE has used in the past both a Somali language newsletter and radio broadcasts to provide information to teachers in all parts of the country. Both offer advantages for supporting and informing primary and secondary teachers, but require human and material support not now available.

Potential Problems. Decentralization of Training. The decentralization of primary inservice training to regional centers will require further administrative systems for planning, implementing and monitoring these activities. The difficulty of communication and transportation in the country compound these problems.

Resistance to Change from Existing Teachers. The existing untrained and undertrained primary teachers may be assumed to be employing the traditional authoritarian style of instruction and may resist the inservice training approach introducing the child-centered approach of the New Reform Curriculum. Regional and district trainers should be alerted to this potential problem and

be prepared to present the new material in a way which will permit teachers to accept this change.

Training of Inspectorate. The role of the Inspectorate is critical both for the success of the new curriculum to be implemented in the primary grades and for the upgrading of existing undertrained primary teachers. A basic shift in function for this unit from administrative inspection to facilitation of the learning process must take place. The MOE is concerned about developing a new role for the Inspectorate and a training course conducted by a representative from the British Inspectorate of Schools has been scheduled.

Development of Regional Inservice Training Schedules. The Somali situation of urban, agricultural, nomadic, and seminomadic populations requires that regional inservice training schedules be devised to fit the realities of work activities in the country. Much is known of the variety of regions and their employment patterns. Regional Education Offices should develop these schedules so that plans for inservice training are realistic and available to the greatest number of participants. This concern presents both coordination and manpower problems for the MOE training department.

Action Plan. Suggested action steps for a two-part program for primary inservice training are discussed below. The Action Plan in Chapter 4.0, Section 4.3.4 contains additional suggestions for both preservice and inservice training programs. Existing untrained and undertrained teachers present a special problem. Many of these may be dedicated teachers assisting their students to the best of their abilities. Those who are attempting to carry out their teaching tasks deserve the opportunity of upgrading their skills and a chance to participate in disseminating the New Reform Curriculum.

These teachers came into the system under special historical circumstances of rapid expansion and their present deficits derive from two causes:

- some of these teachers received no teacher training because they were recruited during a time of great national urgency. Government's goal at the time was to to reach as many students as possible with the new national education system; and

- others received training at Halane Primary Teacher Training Institute, but had completed only primary school themselves. To meet the urgent need for teachers, one-year accelerated courses were held in both 1976/77 and 1977/78. Almost 4,000 primary teachers were graduated from these courses. Preservice training was returned to two years in 1978. These teachers, none of whom had attended secondary school, have thus acquired only a low level of subject area skills. Their training at Halane Primary Teacher Training College included only content area courses and theoretical courses on philosophy of education, and presented little opportunity for supervised practice teaching.

An action plan for dealing with these problems would consist of two parts: one to serve those untrained or undertrained now teaching primary grades, and another to serve the new generation of primary teachers produced by the revised primary teacher training centers now admitting only secondary school graduates (Chart 3.1).

Design a Competency-based Inservice Program for Untrained or Undertrained Primary Teachers. The inservice teacher training courses developed by the Institute of Inservice Teacher Training (IITT) suggest some possible plans for implementing a primary teacher upgrading program (Appendix VII). IITT works in close cooperation with the Curriculum Development Center and experiences shared in the field of teacher training are mutually strengthening. IITT has developed two types of courses:

- a two-year program of inservice teacher training for beginning primary-graduate teachers; and
- a three-year course for upgrading certified teachers' academic and professional knowledge and skills.

The methodology of the three-year upgrading course, begun in June 1985, and using distance education, self-study, and study group techniques, might be considered for use with present untrained and undertrained primary teachers in the formal system.

The problems of training staff at decentralized regional centers, distributing materials, and supervising programs in remote areas suggest that a locally-relevant distance education application might be appropriate. The IITT model is based on audiocassette tapes recorded centrally and supplied to study groups on a regular basis with accompanying seminar materials. These

materials exist now in Somali, although they would require copying and distribution. A list of the IITT topics already developed in printed form for the basic two-year teacher training course is included in Appendix Three. These topics were chosen for postprimary teachers and probably are appropriate for the primary teachers recruited for primary teacher training without formal training.

The MOE has made efforts to help such untrained teachers, and has offered correspondence courses in the past. These courses were intended, however, for primary school graduates to gain sufficient secondary level subject area skills to pass the examination for admittance to Lafoole College of Education for secondary teacher training. They were not materials designed for primary education methodology or school management. It is not known what percentage of teachers took advantage of this assistance, but since the course was self-study of existing secondary text material, it is assumed that most were self-motivated learners who intended to attend Lafoole College of Education after passing the teachers' examination. The MOE has also operated a radio program to inform teachers of seminars, workshops, and curriculum plans. Radios are widely owned throughout Somalia, and the facilities of the Educational Broadcasting Unit of the National Broadcasting Service are available. A twice-weekly MOE program for teachers was planned, with programs lasting for 15 minutes each. Ten lessons were prepared by the MOE and some recorded on cassette, but the program is not now in operation.

A well-planned inservice program to improve the quality of primary teachers is needed to upgrade the existing teaching corps, and distance education programs--such as the IITT model--offer many advantages in the present situation. The greatest advantage being that they exist now and can be supplied to the most remote areas of the country in a consistent format and with acceptable regularity. Since the majority of the untrained and under-trained teachers now in system are serving in the most remote areas, this advantage would be great. An immediate advantage is that these materials

exist now within the MOE and might be easily adapted to the special needs of the formal system without the investment for design and development.

Identify Program Objectives for Both Inservice Programs. An effective inservice program for upgrading existing primary teachers or supporting adequately trained teachers should be based upon an identification of the competencies required for teachers in Somalia primary schools. This requires a task analysis for Elementary and Intermediate teachers in the variety of school and classroom situations found in Somalia.

Identify Strategies for Both Groups of Primary Inservice Training.

Based upon the competencies identified for primary teachers, strategies should be developed for providing the required inservice training to the two groups. As suggested above, the untrained and undertrained teachers previously recruited into the system present the most difficult problem. A feasibility study should be conducted to investigate using the IITT model of distance education or some alternative application suited to the Somali situation and recurrent costs constraints. This study would be appropriate for donor funding.

Develop Competency-based Instructional Modules. Based upon the teacher competencies identified, instructional modules should be developed or adapted from existing materials.

Develop Experimental Inservice Training Programs and Try Out in Representative Regions with Appropriate Populations. Following the steps outlined above, the recommended strategies for providing inservice upgrading for existing and support training for new teachers graduating in the future from the revised Primary Teacher Training College should be developed by MOE and tried out in areas which represent the common school conditions throughout the country.

Revise Based on Try Out and Implement Program. The two programs developed might be revised following the experimental phase and implemented through the regular MOE organization. Central Inspectorate staff could be

trained in the new programs and provide training to other regions through the Regional Education Offices.

Alternative Strategies. The Programmed Teaching (PT) strategy for instructional materials, which is presented in Chapter Four (p. 4-42), should be considered as an alternative which would permit the existing corps of untrained and undertrained primary teachers to effectively use the new curricular materials now being developed by the MOE Curriculum Development Center. PT materials permit untrained teachers to manage the classroom learning process without the methodological training of traditional preservice and inservice teacher training programs. Chapter Four presents steps by which MOE may implement PT strategies to build upon the new primary materials now being produced.

Contribution to External Efficiency. An effective inservice primary teacher training program for the existing primary teaching corps which is currently untrained or undertrained would result in a significant improvement in instructional quality for the majority of children in the national education system, thus increasing their opportunities for future success. Existing teachers can be trained in methods of dealing with the widespread combination of multigrade and multi-subject teaching required in rural schools. They can be trained in the use of new instructional materials which will increase their effectiveness, even though their subject area knowledge may be low. Lowered dropout rates for children in the primary grades can be translated into higher literacy and numeracy levels for the nation.

Contribution to Internal Efficiency. The present low level of primary teacher training creates serious internal inefficiencies in the national education system. High attrition and repetition rates are indicative of the low quality of the schools. Effective inservice support for the primary teachers now within the system can directly affect these problems.

Contribution to Access and Equity. The recommended program of a two-part inservice program to support improvement of primary school quality would increase regional access to educational opportunity. The difficulty of providing educational services in Somalia is compounded by seasonal patterns of agricultural, nomadic and seminomadic populations, in addition to the serious problems of transportation and communication throughout the country. Distance learning techniques, when adapted to the particular patterns of regional life, along with small group study techniques, could directly affect the quality of instruction available to the majority of Somalia's population which has limited access to urban schools.

Cost Considerations--An Inservice Program for Existing Primary Teachers

Substantial investments have already been made in the primary teacher training program for refugee schools. The adaptation of this program would require the cost of additional cassette tape copies, reproduction of printed materials, and then distribution through DEOs, REOs, and Inspectorate. Specification of the recurrent costs for this program are available within MOE (IITT), as the program is currently operated for refugee populations in Somalia.

An Inservice Program for Future Primary Teachers (Secondary School Leavers). The cadre of future primary school teachers, who will be secondary school teachers, will remain small for the foreseeable future.

The inservice program for this new cadre would emphasize development of professional skills, not remediation of academic skills, and would be based upon an analysis of competencies required in Somali schools. The costs for this analysis are discussed in Section 4.3.2.

The cost of training headquarter personnel for presentation of the new inservice program are estimated as:

So. Sh. 1000. travel
So. Sh. 900. per diem (3 days @ 300.)

So. Sh. 1900. participant expenses

712 participants @ 1900. = So. Sh. 1,352.800

3.3.3 THIRD PRIORITY: Improve the Quality of Secondary Teacher Training: Recommendations 6-9

Recommendation 6: Provide a Four-Year Secondary Teacher Training Program with One Year of Supervised Practice Teaching

Recommendation 7: Design and Implement a Secondary Teacher Training Program with Emphasis on Training for Professional Educators

Recommendation 8: Train Secondary Teachers at Lafoole College of Education in the Use of Existing Somali Secondary Texts and Instructional Guides

Recommendation 9: Strengthen the Somali Language Program and Text Production Unit at Lafoole College of Education

Description. All secondary teacher training in Somalia is conducted at Lafoole College of Education, one of twelve faculties of the Somalia National University (SNU). As part of SNU, Lafoole is administratively under the Ministry of Culture and Higher Education (MCHE), but maintains coordination with the MOE. The college began as the National Teacher Education Center (NTEC) created by a program with Eastern Michigan University (Ypsilanti) under a USAID contract in the early 1960s. NTEC originally trained teachers for the primary grades, but was later changed to train teachers for the general secondary schools, before becoming a full liberal arts college. The only social science discipline outside Lafoole today is the Faculty of Economics. Lafoole is the largest college of SNU and currently enrolls approximately 1,300 of SNUs total enrollment of 3,000. SNU intake for 1984/85 was 1,000, 400 of which were assigned to Lafoole. Students for the Lafoole course are selected by SNU Deans on the basis of their examination score. Consideration is given for their secondary school record (if they have attended secondary school).

During the period of rapid system expansion following the Revolution (secondary school enrollment increased from 4,900 to 11,000 in 1972-78), the demand for general secondary school teachers increased dramatically. The number of general secondary teachers throughout the country increased 185% in 1978-82. To supply these new teachers, the secondary teacher training program

at Lafoole was reduced from a four-year program to a two-year intensive program on a trimester plan. By the time of the Sector Assessment in 1983, however, significant problems had been identified as a result of the intensive course. The output of secondary teachers had actually decreased as many of the students were unable to complete the abbreviated intensive course, while the number of students not graduating from the program but remaining beyond the two years required a reduction in the intake. The lack of practice teaching for those training to become secondary teachers caused additional decline in the quality of the general secondary schools in the national system.

In recent years, the college has announced plans to return the program to four years, but this has not yet occurred. These plans outline two 21-week semesters with a supervised teaching practice interim between the fourth and fifth semesters.

Like all education programs in Somalia, the college is seriously affected by the current economic situation and has great need of equipment and materials. English is used for instruction at Lafoole and all texts are in English. The texts available for students are seriously out-of-date. Education courses tend to be theoretical, and taught from texts completely unrelated to the Somalia educational system. Philosophies of education, although sound in theory, are not practically related to Somalia classroom situations and no practice teaching is provided for training in useful application of theories. No texts by Somali authors are used at Lafoole and there are no sophisticated instructional materials adapted to the Somali situation.

A recent report (December 1984) by the University of South Carolina identified "a desperate need for broad-based educational research skills among the Lafoole faculty so they can become self-sustaining in textbook development, curriculum and pedagogue." A textbook production center in the college for the production of Somali textbooks is not functioning due to lack of equipment and supplies.

Most students enter Lafoole from two sources: recent general secondary graduates who have completed their year of National Service and passed the SNU entrance examination (education is frequently not their first choice of study) and former primary school teachers who have completed three years of teaching service and passed the entrance examination. Both groups are provided room and board at Lafoole, but the stipends provided are unequal. Former primary teachers receive a monthly stipend of one-half their current salary, while those entering via general secondary and National Service receive So. Sh. 30 per month.

The present Lafoole program concentrates on producing subject area specialists, not secondary classroom teachers or administrators. There are four divisions of the college, Division of Science and Mathematics, Division of Social Sciences, Division of Education, and Division of Languages, each offering major and minor programs of study. Although all students are required to take a common core of general education courses, these tend to be theoretical and not practically related to the Somali secondary school situation. The divisions produce specialists in their subjects, not professional educators competent to teach several grade levels and subjects.

A Somali Language Program has been established at Lafoole to prepare secondary teachers more adequately in teaching analysis and written styles of Somali, and also to assist in the development of written Somali as an adequate technical language. This program works closely with the Somali Language Development Department of the Academy of Science and Arts, which is tasked by government with development of the national language. Since the approval of the Somali orthography in October 1972, the potential for use of Somali in the rapidly developing technical fields, including education, has not been realized. The MOE was able to develop quickly Somali materials for primary and secondary grades, and has developed systems for improving these materials, but the widespread use of external languages remains a source of major inefficiencies in the education system. The training of general secondary

teachers at Lafoole in English for teaching careers in the Somali language is defended on the grounds of the lack of appropriate Somali language materials. This is the case, but English texts describing educational situations and procedures in the United States bear little relationship to the needs of general secondary teachers in Somalia. Teacher training texts for the Somali national education system have not been produced as yet, with the exception of the guides for primary teachers recently developed by MOE.

Other factors which contribute to the continued use of external languages in teacher training are:

- the prestige of foreign languages. Publication of Somali texts has not developed sufficiently to make available the corpus of Somali literature and history, nor to serve as a vehicle for the new generation of technical and professional writers now working in the government and private sector;

- the employment potential of foreign languages. The acquisition of a foreign language has potential value for gaining a better position in Somalia or abroad. Even as employment in the Gulf States has declined in recent years, foreign national activity has increased in urban areas of Somalia; and

- the lack of standard terms in written Somali. Because written Somali has existed for only a short time, and because earlier colonial experiences and current depressed economic conditions have hindered publication of technical works from every field in Somali, much variability exists in translating technical terms from other languages. Choices between native Somali phrases, English, Italian, or Arabic have not been standardized. This presents difficulties at many points in the government. Technical terms from every field are translated differently into written Somali by different agencies. The resulting confusion could be resolved by the increasing publication of official texts by government agencies in these technical fields, but this has not occurred for the reasons stated above. The problem of standardizing Somali terms has been postponed by most agencies, thus requiring everyone to learn--to some degree--the external language in which the necessary technical works are published. The MOE has continued to publish Somali school texts, and has attempted to find workable solutions to the standardizing of lexical items.

Potential Problems--Costs of Four-Year Secondary Teacher Training Including a Year of Supervised Practice. The costs of training general secondary teachers for four years must be considered by Government. The present three-year program is a firm commitment towards improving the quality of secondary education. This recommendation supports the current three-year program; it adds a strong recommendation for a fourth year of supervised

practice teaching to ensure the practical application of studies completed during the program.

Potential Gap in Secondary Teacher Supply. The shift from the present two-year program for training secondary teachers at Lafoole to a four-year program, including one year of supervised teacher training, will result in a potential gap in the supply of trained secondary teachers available. It should be pointed out that schools were closed in Somalia during 1974/75 to carry out the aims of the national literacy campaign. The relocation of grade cohorts when the schools reopened caused subsequent drops in cohort size which continues to affect the system. At present, the demand for secondary teachers can be met by Lafoole output and the experimental teacher training program now operating at the Polytechnic.

Change of Lafoole from Liberal Arts College to Secondary Teacher Training College. Lafoole College of Education, started as a primary teacher training center, has taken on the functions of a liberal arts college within the Somalia National University. As no other liberal arts faculty presently exists at SNU, there must be careful plans prepared and coordinated with SNU/MCHE if Lafoole is to return to its role as a teacher training institution.

Action Plan. The following action steps are suggested for improving the quality of secondary teacher training:

1. Coordinate Curriculum Reform Committee with SNU/MCHE. All efforts for improving the training of secondary teachers at Lafoole must be coordinated with SNU/MCHE. Past cooperation should facilitate the mechanisms for accomplishing this coordination.

2. Identify Objectives for a Secondary Teacher Training Program Based Upon a Task Analysis of the Secondary Teacher's Role in a Variety of Classroom Situations. The training of secondary teachers should be based upon the current tasks teachers must perform to be effective in actual classroom situations in Somalia. The present training program provides instruction in theory of education via English language texts, but does not prepare secondary teachers for teaching in the present variety of urban and rural secondary schools. By emphasizing subject area specialization, the present program contributes to the underutilization of teachers. Further specification is provided in the Action Plan Section 4.3.4.

3. Design and Implementation of a Four-Year Curriculum with One-Year Supervised Practice Teaching. A three-year secondary teacher training program should be designed and implemented with a fourth year of supervised practice teaching. The curriculum for this program should include training in the existing secondary curriculum as defined by the Somali texts available and the recommended instructional guides. Supervised practice teaching experiences should include a variety of grade levels and subject areas as well as assignment to both rural and urban schools.

4. Identify Needs and Objectives for Lafoole Somali Language Department. Objectives for the Somali Language Department (SLD) should be defined based upon an analysis of the uses of Somali throughout the education system. This analysis could be conducted by a task force composed of the SLD, MOE and the Somali Language Development Department of the National Academy of Sciences and Arts. This task force should define objectives for the production of Somali language materials throughout the education system.

5. Identify Needs and Objectives for Lafoole Somali Text Production Unit. The Text Production Unit at Lafoole should receive support to identify immediate and long-term needs, identify objectives, and undertake production of priority Somali language texts for secondary teacher training. This unit is not functioning at present, but could be activated to produce either existing Somali translations of English texts, adapt English teacher training texts to current system needs, or produce original secondary teacher training material produced at Lafoole.

Alternative Strategies--Instructional Guides. From the preceding description of the training of secondary teachers, it can be seen that the existing secondary curriculum is inadequate, based upon hastily translated foreign texts, and that teachers are now trained neither in the curriculum nor how to use it. The recommendations included in this study support long-range goals of the MOE, and obviously require substantial investment as well as recurrent cost obligation. Immediate improvement in the quality of secondary schooling --with much less investment--could be obtained through the development of instructional guides to direct the teachers' activities without requiring expanded training commitments. These guides would be based upon programmed teaching technology (discussed in detail in Chapter 4.0) and would permit teachers to use existing texts much more effectively. The design of a new secondary curriculum and the production of new secondary texts is a MOE priority, but available resources are strained by the current commitment to produce new primary texts. For the foreseeable future, secondary schools must

make the best use of existing texts, and the investment in instructional guides might be considered as a practical step.

Contribution to External Efficiency. Recommendations for improving the training of general secondary teachers are intended to result in more effective instruction by introducing educational training which focuses on teaching practical skills, not theoretical study. At present, Lafoole functions as a liberal arts college, preparing teachers for a specialist subject area teaching in a tradition theoretical way. Although little information is available, there is assumed to be little articulation between this traditional type of secondary education and the needs of the work force in Somalia today.

Contribution to Internal Efficiency. The recommended changes in the preservice training of general secondary teachers will affect the internal efficiency of the educational system by improving the student flow through the system, measured by progression rates, and instructional efficiency as indicated by student/class ratios. The large class sizes reported along with low student/teacher ratios indicate consistent underemployment of teachers. Teachers are trained in specialty areas, not in general education skills, and regard their work as limited to one subject area. This underutilization of teachers does not permit the system to profit from its investment in each teacher's training.

Contribution to Equity and Access. The recommended changes do not directly affect government policies of improved access and equity. Government has made significant progress in extending educational opportunity throughout the country. The present recommendations support government commitment to concentrate at this time upon improving school quality.

Cost Considerations. Costs for improving secondary teacher training programs at Lafoole would be borne by MCHE, through support from donor agencies now supporting that center. These would include technical advisors for curriculum reform and production costs for Somali language instructional materials. These costs would include:

1. Donor Inputs

   a. Personal. Two Technical Advisors for four months each to assist MCHE and SNU with developing a teacher training curriculum based upon competencies required for secondary classroom teachers. Somali support staff of drivers, word processors, and translators will be needed.

   b. Materials and Equipment. All text and reference materials related to the existing secondary school curriculum. Word processing equipment including a high-speed printer.

   c. Other. R/T airfare for Technical Advisors. Transportation and per diem expenses for Advisors. Postage, telephone, and duplication costs for materials produced.

2. Somali Government Inputs

   a. Personnel. Curriculum team composed of SNU faculty members.

   b. Facilities. Necessary office space at SNU for curriculum team.

   c. Equipment and Materials. Office supplies, duplication equipment and supplies as necessary.

   d. Other. Administrative support costs. Vehicle operation costs for team.

A MOE decision not to pay salaries to teachers while attending Lafoole, but to provide only a stipend equal to that provided for non-teachers, would provide savings to offset the costs of the recommended fourth year of supervised teaching.

3.3.4 FOURTH PRIORITY: Improve the Quality of Secondary Teacher Inservice Training: Recommendation 10

Recommendation 10: Develop and Implement a Competency-based Inservice Program for Secondary Teachers

Description. No systematic inservice training program for general secondary teachers exists at present. This is a concern of the MOE as described earlier in in this section. The Teacher Training Task Force and Central Inspectorate have undertaken the inservice training at this level to date. The Central Inspectorate has been trained by the Task Force to conduct the primary teacher inservice workshops held during vacation time outside the Banaadir area, but this has not been undertaken for secondary teachers. The reasons for this lie in two areas:

- the need for inservice training at the primary level is so great at present, and MOE training resources so limited, that secondary teachers have not been given first priority; and
- the implementation of the new curriculum at the primary level, and the urgent need to introduce both teachers and headmasters to the new approach and materials, has taken precedent over secondary teachers who use older, more familiar instructional materials.

Potential Problems--Coordination With Ministry of Culture and Higher Education. Responsibility for teacher training for the national education system is divided between two ministries. The MOE is responsible for pre- and inservice training of all primary teachers, while the Ministry of Culture and Higher Education (MCHE) administers the training of general secondary teachers at Lafoole. The inservice training of these secondary teachers falls between both ministries at present. To develop, implement and monitor a systematic inservice program for secondary teachers, a coordinating council must operate with staff from both Lafoole and the MOE Department of Training. Cooperation has been successful between these agencies previously, and the introduction of the recommended instructional guides (Chapter 4.0) for the existing Somali language secondary texts provides an opportunity to establish regular mechanisms for implementing inservice training.

Lack of Adequate Somali Secondary Texts to Serve as Basis for Teacher Training. The present secondary curriculum is defined by a set of Somali language texts which were translated from foreign language texts during the nationwide effort to get Somali language materials into the classroom. They do not constitute an adequate curriculum for the national system, and are scheduled to be replaced after the priority development of a new primary curriculum. It is recommended that instructional guides be prepared to assist secondary teachers in using the existing texts (see Chapter 4.0). The use of the instructional guides, and the programmed teaching technology upon which they are based, would be suitable for secondary teacher inservice training courses.

Action Plan

1. Task Analysis and Specification of Training Objectives. Specification of secondary inservice training objectives should be based upon an analysis of tasks teachers must now perform in school and classroom. This analysis should include both rural and urban schools, and focus on incomplete-cycle schools as well as schools offering instruction at all grade levels.

   Further specification of action steps is provided in Action Section 4.3.4.

2. Development of Inservice Strategies in Collaboration with Regional Education Offices and Central Inspectorate. Regional Education Offices (REO) and the Central Inspectorate (see discussion of recommended Regional Support Units in Chapter 2.0) should work in collaboration with MOE Department of Training to develop regionalized strategies for secondary teacher inservice training. Inservice training of Regional and District Inspectorate will be at the request of REOs. These strategies should reflect the school calendar for each region and local priorities for secondary schools.

3. Training of Central Inspectorate for Implementing Secondary Inservice Strategies. MOE should develop plans for training Central Inspectorate staff to implement training of Regional and District Inspectorate as coordinated through REOs. Regional and District Inspectorate should be responsible for implementing all inservice secondary training in each region.

Contribution to External Efficiency. The quality of instruction in Somali secondary schools remains the constant constraint on future training and employment opportunities. The implementation of a secondary teacher inservice program will contribute to improving the quality of education available, even though the issues of availability of suitable instructional materials and teacher attrition due to low salaries remain to be resolved.

Contribution to Internal Efficiency. Inservice training opportunities which support secondary teacher roles as professional educators, and not area specialists, should produce teachers competent to manage the multigrade, multi-subject teaching situation common to most Somali schools. The system may thus better utilize teachers and better serve students.

Contribution to Equity and Access. In the years during which MOE objectives centered on system expansion, school quality was postponed in order to reach previously unserved populations of rural nonurban and female students. These objectives have been achieved, even though further expansion remains

possible. This study concentrates on the quality of education now accessible to the student population, and strategies for improving schools in all areas. The inservice program for secondary teachers, coordinated by REOs and implemented in schools by the Regional and District Inspectorate provides a mechanism for improving the quality of instruction in all areas of the country.

Cost Considerations. The recommendations for an improved secondary inservice program are based upon a task analysis which would identify those competencies required by secondary teachers in Somalia classrooms. Technical assistance is needed for conducting the task analysis. The cost of this analysis will be similar to those outlined in Table 4.4 (Chapter 4).

3.3.5 FIFTH PRIORITY: Develop a Comprehensive Policy for the Use of English in Primary and Secondary Teacher Training Programs: Recommendations 11-12

Recommendation 11: Strengthen English Instruction at the Primary and Secondary Levels with Emphasis on Reading Skills

Recommendation 12. Design and Implement Instruction for English Reading Skills at Lafoole College of Education

Description. The use of Somali throughout the national education system has increased steadily during the past fifteen years. The introduction and rapid dissemination of a written form of the language has permitted the creation of textbooks and other learning materials. Somali, along with the culture-base language of Arabic, is used throughout the primary and secondary systems. Revisions and improvements of Somali instructional materials are being systematically carried out by well-qualified staff in the Ministry of Education and, despite current problems of production and distribution, will continue to flow into the educational system, standardizing and enriching the written form of the Somali language. The continued development of written Somali as an adequate technical language underlies the development of the national educational system, as well as other areas of national development.

At the same time as Somali has achieved wide distribution as the medium of primary and secondary education, postsecondary teacher training has

increasingly used English language materials for instruction. In most cases, postsecondary education has attempted to give some additional support in an attempt to raise English skills to the level required. Brief intensive courses, however, have not been sufficient to raise English skills to the level required for students from English university-level texts and English language instruction.

The Sector Assessment discussed the language issues leading to serious inefficiencies in the education system and identified the following specific problems:

- the necessity for students to "retool" linguistically at several different points in the system, and the expense this requires in terms of student and teacher time, materials needed for a limited group, and delays in producing trained manpower; instructional inefficiency at educational levels when students and teachers cannot function at adequate levels in a new language;
- vacillations in school curriculum to accommodate change in language policy, resulting in redundancy or inadequacy of instructional materials. Unnecessary changes are costly for a system already overburdened to produce materials at all levels in the national language; and
- limited resources and availability of optimal language instruction.

These problems remain within the system and should be addressed. To do so will inevitably mean coordination between a number of government agencies concerned with these issues. These agencies include the Academy of Science and Arts, Somalia National University--including Lafoole College of Education --and the Ministry of Education.

An interagency colloquium addressing these issues, and their significance for the entire educational system as well as other governmental agencies, should be convened and should submit to government an action plan. Those responsible for making the appropriate decisions should be present at this meeting. The present situation encourages an increasing use of external languages due to the difficulty encountered by each agency, department, and division of government in producing adequate texts in Somali. The result inevitably is reliance on external language materials, even when these cannot

be fully understood by those who must use them, or when they are completely inappropriate to the present Somali situation. A national policy is needed to coordinate and direct the efforts required to establish a more efficient policy of language use.

The long-term solutions for the language problems constraining teacher training in Somalia lie in two complementary approaches:

1. develop English language reading skills to a higher level by (a) beginning English study in earlier grades; and (b) defining clear objectives of developing reading skills, not general conversational fluency; and

2. commit the necessary resources for a systematic development of Somali teacher training texts which reflect the specific needs of teachers in the national system and prepare teachers to provide quality instructional opportunities within the objectives of a national curriculum.

The first approach is discussed in this section and the second is discussed under the Third Priority: Recommendation 9.

Potential Problems--Production and Distribution of New Materials for Teaching English Reading Skills. Great effort has been made to produce Somali language materials for both primary and secondary schools in the national system. MOE has continued to improve instructional materials and a new set of materials for primary schools in well under production, with secondary to follow in the future. These efforts have strained the limited resources available, and consideration should be given to the existing capacity before launching a new program. New materials should be developed to supplement and extend existing materials, not as a separate program.

Additional Training for Primary, Secondary, and Postsecondary Teachers. The effective teaching of reading skills in a foreign language requires an additional training component for primary and secondary teachers, and the trainers of those teachers. Such training components must be included in inservice programs at the appropriate level and in the preservice programs at the Lafoole College of Education and the Primary Teacher Training College, wherever it is located.

Action Plan. A discussion of recommended steps for implementing an English reading skills program is included below:

1. Define System-wide Objectives for Reading in English. Clear definition of the English reading skills are required for students at each educational level. These should be derived from a task analysis at the appropriate level. At primary levels, these might include reading of simple directions, short descriptions and instructions. Conclusions and inferences from longer narratives would be specified at higher grade levels. At Lafoole and the Primary Teacher Training College, postsecondary graduates would encounter academic English and the technical terms of the education profession. This process requires the cooperation of an interagency task force established for this purpose.

2. Design and Produce Instructional Materials for an English Reading Skills Program as Part of the New Reform Curriculum. Instructional materials for the English reading skills program should be integral to the New Reform Curriculum. They should relate to and support the other curricular activities planned for primary and secondary schools, and not be separated from the other learning activities of the students. At the appropriate levels, simple authentic or simplified texts from English science and math may be matched to the subjects currently under study in the Somali curriculum. English reading may in this way support the school curricular objectives, and in turn, students will be supported in their English reading by their other school experiences.

3. Design and Produce Teacher Training Materials for the English Reading Skills Program. Primary and secondary teachers training at the Primary Teacher Training College or at Lafoole should be instructed in the system. This instruction should include: objectives of the reading program, instructional materials, classroom management of the system, and evaluative techniques. Experience with the system should be included in the supervised practice teaching component of all teacher training.

4. Strengthen the Reading Skills Component of the Lafoole College of Education Intensive English Program. The acquisition of English reading skills should be emphasized within the present Intensive English Program at Lafoole until graduates of the recommended English Reading Skills Program at Primary and Secondary levels reach Lafoole. The present program has been designed to serve secondary school graduates and primary school graduates who have served three years as teachers. The English proficiency level of many of these students is quite low, and instruction must be aimed at that level. The recommended extension of a reading skills program to primary grades will result in Lafoole entrants with a significantly higher level of English reading proficiency.

Contribution to External Efficiency. Proficiency in English as the language of technology in Somalia today is a priority for many passing through the national education system. A combination of circumstances has made English an important language for Somalia, both in terms of access to

information and technology and for gaining better employment opportunities. The desire to acquire English as a profitable external language, however, should not be confused with the need to effectively train teachers for the national education system. The creation of an English reading skills program from primary grades should satisfy both requirements.

Contribution to Internal Efficiency. At present, entrants to post-secondary teacher training programs are not adequately prepared in English language skills to profitably study from texts written in a high-level academic English. A systematic program to prepare them to do so provides opportunity to better profit from the postsecondary course of study. This provision of an integrated English reading course must not be seen, however, as a replacement for the development of a much needed Somali language curriculum. No matter how proficient in reading English students may be, their studies can be only as profitable as the information contained in the texts themselves. The out-of-date, foreign systems described in the English texts used by students should be replaced by Somali training to prepare future teachers for the Somali educational system.

Contribution to Equity and Access. Extending English language training to primary grade levels will provide opportunity for students in all regions of Somalia to acquire some use of this important external language. For the foreseeable future, some proficiency in English will offer a broader choice of training and employment to most people.

Costs Considerations. The costs of convening an interagency colloquium to propose an action plan for language policy would be small as the government personnel involved are present in the Moqdisho area and meeting facilities are easily available. The provision of a Technical Assistant expert in language policy issues in developing nations would be an appropriate donor agency activity.

The costs of designing and implementing a new English Reading Skills Program in Primary and Secondary schools, however, would be considerable.

Estimated costs of texts are included in Table 4.6 (Chapter 4.0). These costs would include design, production, and tryout of materials as well as training of teachers in their use. These costs, however, should be considered in relation to the costs of training wasted because students are not able to read English technical writing at a level sufficient to profit from the instruction.

3.3.6 SIXTH PRIORITY: Decentralize Primary Teaching Training Centers: Recommendation 13

Recommendation 13: Design and Implement a New Primary Teacher Training Program at a Central Location Prior to Creating Regional Primary Teacher Training Centers

Description. Decentralization of primary teacher training programs remains a concern of the national education system, and decentralization programs deserve support as practical steps towards improving the quality of education in rural areas. The existence of only one primary teacher training institute clearly denies access to those who might wish to train as primary teachers, but cannot come to the Benaadir region, and also creates problems when teachers who have been living in the urban region are assigned to remote areas.

At the present time the lack of a curriculum for a primary teacher training center is the first concern for MOE planners. Following the establishment of a four-year primary teacher training program with one year of supervised practice teaching, based upon the needs of the primary system in Somalia and providing practical methods for meeting those needs, the MOE should extend primary training to the identified regional centers. At that time, the training calendar and curriculum should be adapted to the local situation in each region.

This recommendation differs from the others in this study as it suggests expansion of the system, rather than stasis or contraction while implementing quality improvement programs. This is justified on the following grounds:

- Many primary teacher trainees are denied access to the training program because they cannot leave their districts and come to the

capital area for the length of the training program. These groups presumably includes many women who represent a very stable work force for primary grades, and who are not able to leave their families for economic and cultural reasons.

- The facility for the primary training college at Hargeysa is now available. New construction is not necessary.
- Because students have more opportunity to live with their families or extended family members at regional centers, the decentralized training college will not have to provide boarding facilities, thereby realizing significant savings.

Potential Problems--Cost of Operating Regional Training Centers. Given the current economic situation in Somalia, consideration must be given to the additional cost of operating regional primary teacher training centers. Boarding will not be required by most students. If boarding is needed by some students, alternative funding programs might be considered.

Cost of Training Additional Qualified Faculty. No program presently exists for training the faculty of the new secondary graduate training program for primary teachers in the capital district. The provision of qualified faculty to staff the regional centers should follow the development of a training program for the existing faculty.

Action Plan

1. Design and Implement Curriculum for Existing Primary Teacher Training Center. The New Reform Curriculum materials and the manual developed for Halane students form the basis for developing a new curriculum for training primary teachers. Training should culminate in a one-year supervised practice teaching experience.

2. Train Faculty for Existing Primary Teacher Training Center. The change from primary-graduate entrants to secondary-graduate entrants requires a training program for faculty at the primary center. This training program should be fully developed prior to opening regional training centers.

3. Establish the Hargeysa Regional Primary Teacher Training Center Prior to Opening Other Centers. The Hargeysa Center should be opened after the capital district center is functioning as recommended. That location is most distant from the capital and an existing facility is available.

Contribution to External Efficiency. Regional centers will provide opportunity for professional training of primary teachers in remote regions.

At present, there exists differences between the education offered students in regions near the capital and that available away from the capital area. Students who leave programs in remote areas prior to acquiring permanent literacy and numeracy skills are limited in their opportunities for employment in public or private sector. Since student attrition rate is related to teacher quality, the establishment of minimum quality levels for teachers through competency-based teacher programs is a first step towards improving the system.

Contribution to Internal Efficiency. The training of qualified teachers for all regions of the country is a basic requirement for a national system of primary education. Regional training centers, when provided with appropriate curricula and qualified faculty can provide these teachers throughout the country. The increased opportunity for more females to attend teacher training will contribute to a more stable work force, as females remain longer in service and are at present less likely than males to leave for other occupations.

Contribution to Equity and Access. Regional access will be greatly facilitated by location of primary training centers outside of the capital district. Women in rural areas, in particular, will gain access to primary teacher training as they are often restricted at present from coming to the capital district for the available training course.

Costs Considerations. It is difficult at present to estimate costs for opening a regional primary teacher training center in Hargeysa. Decisions regarding the staff of the center would affect these costs. A facility is available and boarding costs--the major expense of operating such centers in the past--will be saved as students will not have to travel to the capital area.

3.3.7 SEVENTH PRIORITY: Assign Only Trained Teachers to Primary and Secondary Schools: Recommendation 14

Recommendation 14: Assign National Service Participants to Appropriate Social Work Other Than Professional Teaching Positions

Description. The assignment of National Service participants with no secondary levels as a profession and not a temporary job is a critical task for all educational systems.

The success of newly developed inservice programs to improve the quality of schools depends upon the motivated participation of teachers who perceive the training as part of a long-term commitment to the teaching profession. Even well-planned and carefully implemented inservice programs cannot be expected to succeed when teachers are temporary and not committed to professional development.

Potential Problems. The elimination of National Service teachers will require that regular certified teachers now in the system instruct those classes to which the National Service teachers have been assigned. Both primary and secondary teachers have been accustomed (secondary teachers more so than primary) to teaching only the specialty area of their choice. Both teacher training institutions in Somalia, Halane Primary Teacher Training College and Lafoole College of Education, have prepared teachers to be subject area specialists and not broadly-experienced educational professionals. Until faculty and curriculum at both institutions have mo from training for content area specialization to preparing for educ expertise in the Somali primary and secondary systems, teachers may remain reluctant to teach other classes. In addition, the difficulties faced by government in placing qualified teachers in remote areas has been in part ameliorated by assigning National Service participants to those areas. The diverting of these participants to other forms of social service will require the establishment of strong incentives and a clear policy of rewarding those teachers who serve in areas away from urban areas.

Action Plan

Diversion of National Service Participants to Other Areas. The MOE should provide the National Service regulating agency with a list of non-classroom priority assignments for National Service personnel available for one-year assignments. This might include the following areas of present need:

- collation and tabulation of data collected at REOs or at MOE Department of Planning;
- storage, inventory, and distribution of texts, other classroom materials and school supplies;
- school construction, repair and maintenance, especially in rural areas; and
- construction of school furniture, storage for instructional materials, and other supplies needed for classroom teaching.

Outside the area of education, many other opportunities exist to employ the National Service participants. The national program of Community Development Projects has received much popular support and deserves the particular attention of the National Service participants.

Contribution to External Efficiency. The continued use of National Service participants as instructors in the national education system both removes these resources from more efficient use elsewhere and discourages the development of the concept of primary teaching as a profession.

Contribution to Internal Efficiency. The operation of an effective instructional system depends upon qualified teachers. This requires that teachers pass through a training program adequate to prepare them for their subsequent teaching duties and that they possess a professional commitment to improve their performance in the classroom or school management.

Contribution to Equity and Access. All students in the national system should have access to the same educational opportunities. Placement of temporary National Service participants in some classrooms deprives some students of that opportunity. While this practice was justified during the time of rapid system expansion, it should now be reconsidered.

The consistent employment of only well-trained and committed professional teachers supports the MOE program of quality education for all regions of the country. The continued use of nonprofessional teachers will result in both lower quality of education for some children and difficulty in establishing primary teaching as a profession.

Cost Considerations. No direct costs will be incurred by this policy decision, but it will implicitly cost more as additional teachers will be required.

3.4 SUMMARY

This section has presented recommendations for improving the quality of preservice and inservice teacher training for primary and secondary levels in the Somalia national education system.

The primary grades serve both as an important socialization channel, introducing the child to values and customs of a community and nation, and as the process for establishing the foundations for all future learning which may be offered or required. The basic operations of learning, organization of task and time, as well as the learner's developing sense of his or her own responsibility for organizing and assimilating information, are acquired during these years. These lessons, though they may be learned through what appear to be simple classroom tasks, are surely the most significant to be taught at any level of educational systems. The significance of learning in the early years should be reflected both in the status of those who dedicate their professional lives to that task, and in the quality of training which a country provides for them.

The recommendations in this chapter for training of primary teachers are based upon developing a recognized professional status for these teachers. Ultimately, the level of recognition and reward for the men and women who are assigned the responsibility for instructing the young children in any country will determine the quality of instruction in the primary grades.

At the present time, there are few incentives for men or women to become primary teachers in Somalia. The present salary is not adequate to meet current living costs, training and materials have not been sufficiently available to match the rapid expansion of schools, and the perceived status of primary teachers has declined from its previous level. The task of planners now is clearly to increase inputs to primary education.

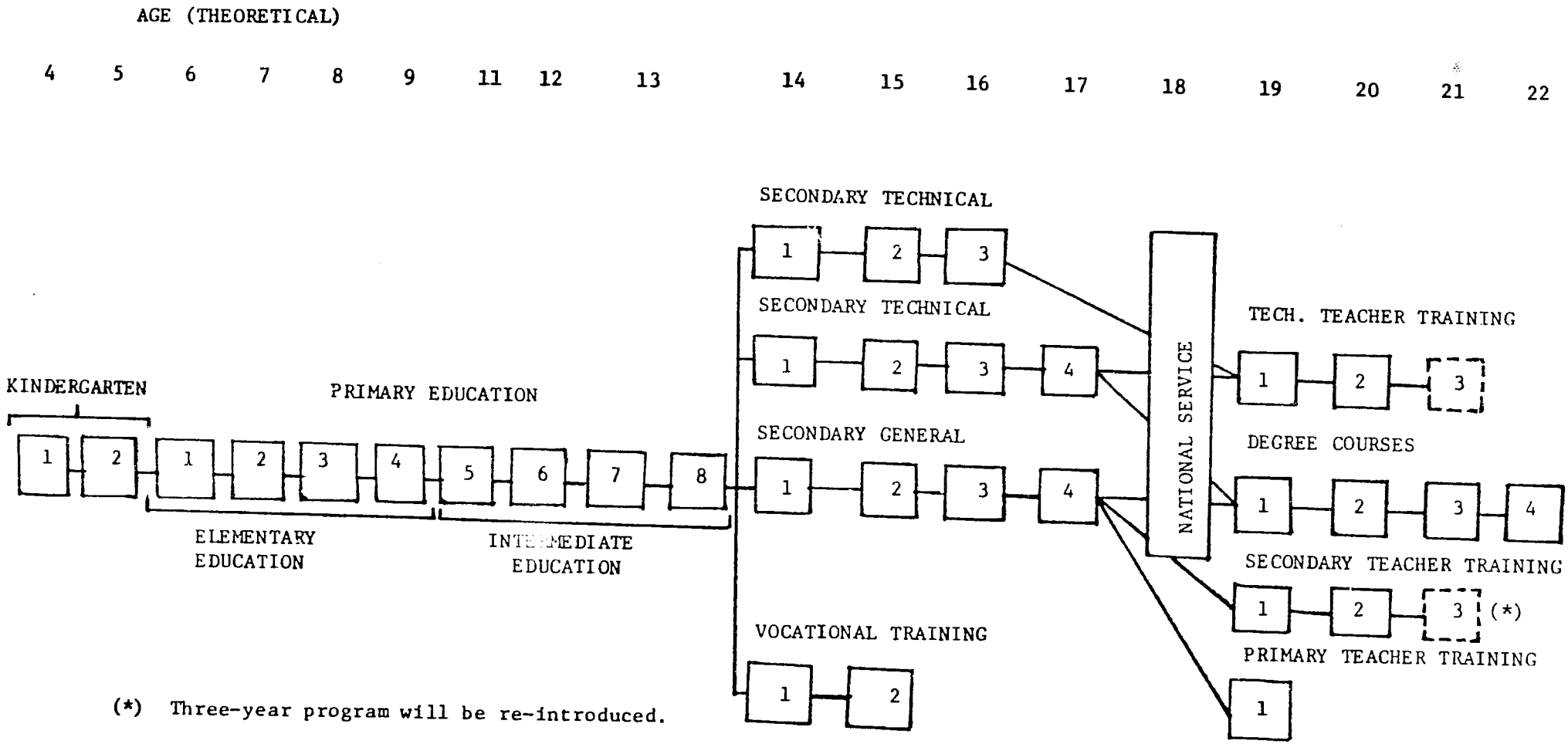
The recommendations here concern how this might be done. They focus on the urgent need to upgrade preservice training to the level offered for secondary teachers in Somalia, to provide some way for existing untrained primary teachers to become better able to carry out their assignments, and to consider how best to plan for the use of Somali and English language use throughout the education system.

Recommendations for secondary teacher training center on redirecting the purpose of the present training center, Lafoole College of Education, from a liberal arts college to an effective teacher training institution. The training provided secondary teachers requires, no less than that for primary teachers, close alignment with the curriculum, materials, and school conditions which those teachers will face, as well as practice teaching experience prior to assignment.

Charts 3.2 and 3.3 present outlines of the current structure of the system and the recommendations made in this chapter.

CHART 3.2

STRUCTURE OF THE EDUCATIONAL SYSTEM

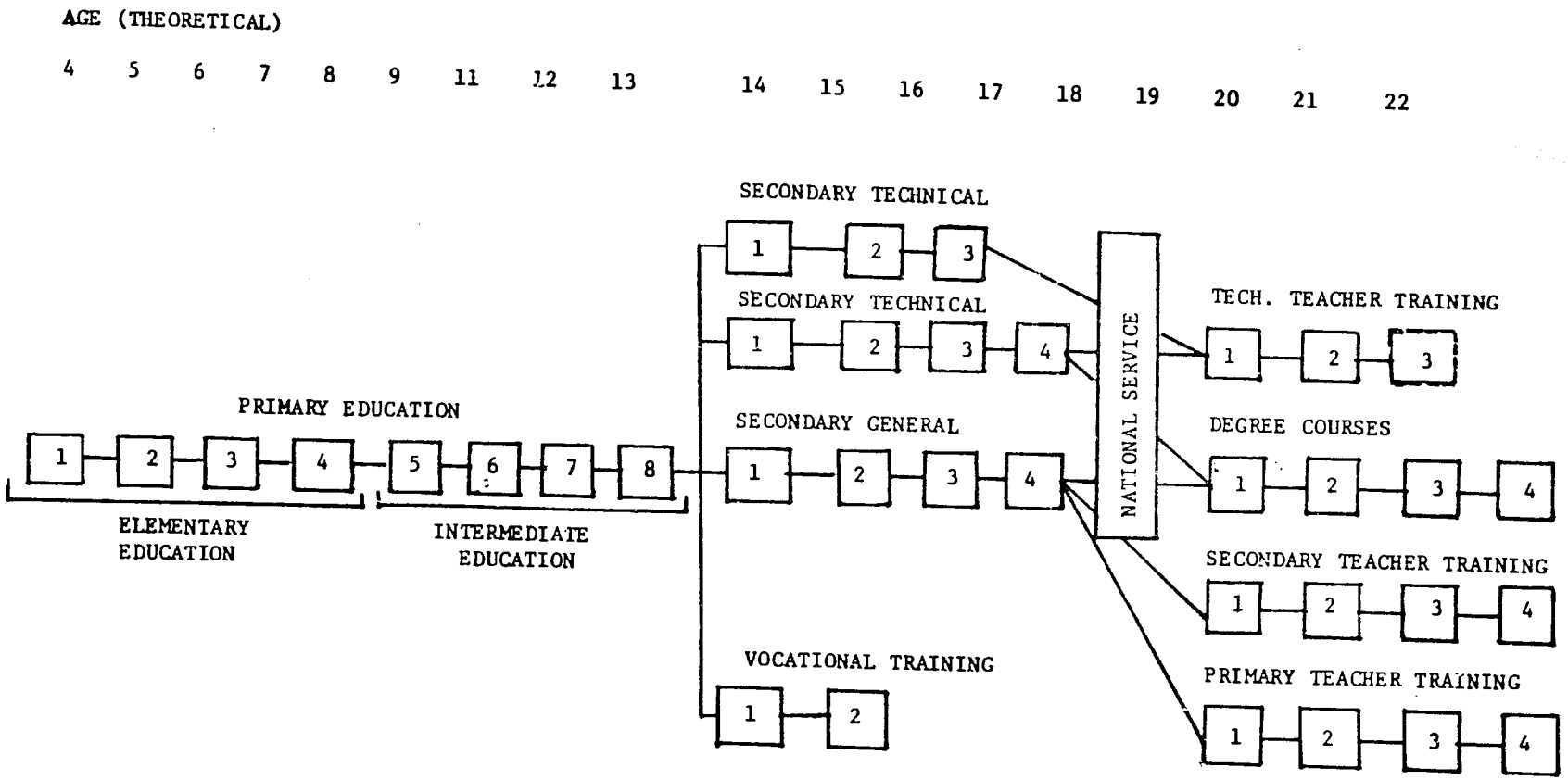


(*) Three-year program will be re-introduced.

Source: Ministry of Education.

CHART 3.3

RECOMMENDED STRUCTURE OF THE EDUCATIONAL SYSTEM



4.0 IMPROVING THE QUALITY OF INSTRUCTIONAL MATERIALS

4.1 INTRODUCTION

This chapter presents recommendations related to the enhancement of educational quality in Somalia through the development of instructional materials. It contains five sets of recommendations grouped under the priority areas of (a) improved production and distribution of instructional materials, (b) strengthening of instructional systems design capabilities, (c) improving the quality of primary school materials, (d) improving the quality of teacher training materials, and (e) improving the quality of secondary school materials. Contributions to external and internal efficiency, access and equality are discussed for each priority area.

In Somalia, instructional materials have been recognized as one of the two major quality enhancement strategies (the other being the improvement of teacher education). The efficiency of instructional materials depends on the degree to which they reflect the curriculum and the degree to which the curriculum, in turn, reflects the demands of the world of work. Therefore, in this chapter, curriculum development and instructional materials development are treated as an integrated whole.

4.2 CURRENT STATUS

The Education and Human Resources Sector Assessment (1984) does not contain a separate section on instructional materials or curriculum development in Somalia. However, several recommendations from that report are related to curriculum and instructional materials. A summary of these recommendations excerpted from different chapters is presented below.

- In Koranic schools, encourage expansion of subject matter on a modest scale to include simple instruction in literacy. numeracy, and other elementary skills;
- make elementary instructional materials available to Koranic schools;
- in primary schools, focus on promoting quality enhancement without incurring dramatic costs in system expansion;

- improve educational materials availability;
- continue review and updating of existing instructional materials;
- design nonformal delivery systems to provide literacy and numeracy to the nomadic population;
- in secondary education, focus on the quality and availability of instructional materials;
- link curriculum development to national and regional labor demand;
- in technical and vocational schools, focus on developing inservice teacher improvement programs in pedagogy and the operation of new equipment;
- develop instructional materials which are competency-based and systematically developed around task analyses;
- adapt materials from existing sources;
- in teacher training, prepare teachers to teach at several grade levels and, ideally, across several subject areas;
- in adult basic education, establish key learning objectives for the relevant target groups; and
- develop curricula and guides.

The recommendations in this chapter are partly derived from, and compatible with, the recommendations in the Sector Assessment. However, this study presents an opportunity to focus on instructional materials and curriculum development. As a result, this chapter deals directly with instructional materials and instructional system development to improve the efficiency of education in Somalia.

Since 1982 (the year during which most of the Sector Assessment data were collected), several significant activities have taken place in curriculum and instructional materials development in Somalia: Ministry of Education's Curriculum Development Center (CDC) has become an important developmental agency. A new curricular strategy has been established. Totally new texts, teacher's guides, and charts for all primary grades are being prepared, beginning with grade 1. Other agencies (such as the Adult Education Institute, Women's Education Department, and the Institute for Inservice

Teacher Training (IITT)) have undertaken their own curriculum and instructional materials development activities. These events are briefly reviewed below.

Ministry of Education's Curriculum Development Center (CDC). CDC was established in 1964. However, it was not until the past few years that it has evolved from a group of teachers revising textbooks to a functional organization undertaking curriculum and instructional materials development. The overall mission of CDC has been summarized as, "to provide the pupils of Somalia with those skills and attitudes necessary for national development." Although many think of CDC as a textbook production unit, it is perceived by the MOE as one of its developmental agencies. CDC analyzes the learning that takes place in Somali classrooms and determines whether it is effective and relevant. Based on this analysis, it prepares materials and strategies that improve the efficiency of Somali education.

The focus of CDC is the quality of education offered in Somali schools. Within this broad area, CDC currently concentrates on primary education with the assumption that the improvement of secondary education depends on the quality of students entering that level. For CDC, the operational definition of educational quality is its relevance to the pupils' environment, provision of skills training, and the students' mastery of basic life skills.

CDC has very close relationships with the other agencies of the Ministry of Education. It is currently under the Director General for Education Development. To obtain the essential data on schools and to ensure that all curricular inputs are coordinated, CDC works closely with MOEs Planning Department. The curricula and the instructional materials produced by CDC are implemented by teachers, monitored by inspectors, and evaluated through the national examinations. These activities involve the MOE Departments of Teacher Training, Inspectorate, and Examinations. CDC also works with the Textbook Production Unit to ensure that sufficient numbers of textbooks are distributed to the schools.

Various bilateral and multilateral programs support CDCs projects. The new Curriculum Project (described on pages 4-7) is supported by UNICEF, the Health Education Project is supported by USAID, and the English Language Project is supported by the British Council. ALESCO provides consultancy services to curriculum development (in Arabic and Social Studies), and to the Audiovisual Department. DANIDA provides a General Curriculum Advisor and a specialist in audiovisual aids.

CDC is currently divided into the following eight departments:

1. Languages (Somali, Arabic, and English);
2. Math/Science (Math and Science);
3. Social Studies (Social Studies and Religion);
4. Environmental Studies (Health Education and Environmental and Practical Studies);
5. Audiovisual;
6. Administration;
7. Publications;
8. Teacher Training Task Force;

A major activity at CDC is the design and development of instructional materials. The following is a list of recent CDC activities in this area:

- Under the Diversification Project, aimed at introducing practical activities into schools, CDC has prepared ten curriculum units on such topics as our environment, soil, and planting trees. The unit on tree planting has been successfully implemented in many schools.
- Under the Basic Skills Project, aimed at the application of knowledge in primary schools, CDC has produced 12 books on such topics as Safety in the Home, The Importance of Water, The Air We Use, Eating Well, and First Aid.
- Under the English-Somali Glossaries Project, aimed at standardizing technical terms in school subjects, CDC has produced dictionaries in Education, Mathematics, Physics, Biology, Chemistry, Geography, and Physical Education.
- Under the Arts and Crafts Project, aimed at introducing local crafts in schools, CDC has produced five units on such topics as basketry, weaving, and sewing.
- Under the Teacher Training Task Force Project, aimed at preparing materials for use in pre- and inservice training courses, CDC has

produced eight units on such topics as Educational Psychology, audiovisual aids, and Teaching Primary Arabic.

- Under the extension work, aimed at increasing the awareness of educational issues among teachers and the public in general, CDC has produced 15 taped radio programs and scripts. It has also produced three issues of a teacher's newsletter, one of which has been printed and distributed.

- Under its visual aids production program, CDC has produced 25 charts for use in schools.

- Under its English Language Programs, aimed at producing texts for schools, CDC has developed and published the first three books and has prepared the outline for Book 4.

- CDC has conducted a number of workshops for its own staff, the staff of Halane and IITT, the teachers in tryout schools (where the instructional materials are field tested), headteachers from various schools, and the staff of the Central Inspectorate.

Mostly through technical assistance, on-the-job training, and project experience, CDC staff members have come to constitute a functioning curriculum development unit. A current goal of CDC is to create a fully operational Research Unit which would undertake the following functions:

- provide the CDC with all the necessary baseline data,

- carry out appropriate needs assessment activities prior to different curriculum design projects,

- analyze formative evaluation data on the effectiveness of new instructional materials and methods, and

- coordinate the approaches and methodologies of various inputs to CDC.

These functions are important to upgrade CDC from a reactive "firefighting" unit to a proactive developmental unit for the enhancement of educational quality in Somalia.

New Curriculum Strategy. A major CDC activity in the past year has been the preparation of methods and materials for implementing the new curriculum in primary schools. This activity is described below.

Concerned about the number of primary school students and the lack of qualified teachers, the Ministry of Education decided to make a new start. The Ministry made several vital decisions which they felt would have an effect on Somalia primary schools:

- stop the recruiting of grade 8 leavers for primary teacher training. From this year (1985), only secondary leavers will be trained as primary school teachers;

- decentralize teacher training. MOE plans to open two Regional Teacher Training Colleges, one in the Northwest and the other in the South, so that these and the surrounding regions can receive an adequate supply of trained primary school teachers;

- set up an academic inspectorate whose task will be to assist in improving the quality of instruction in different subject areas;

- set up an inservice teacher training department to develop systematic teacher training programs;

- set up a teacher training task force within the CDC, to improve the curricula of Teacher Training Colleges, concentrating on teaching methodologies; and

- begin a phased-in extension of the school year;

The New Primary Curriculum is being developed within this context, based on two fundamental principles:

1. learning must be relevant to Somali needs and environment; and

2. students must learn skills, not simply memorize facts.

To implement the New Curriculum, the following changes have been made:

- An increase in the school year to 39 effective teaching weeks, including three weeks for review and examinations. The academic year will consist of three terms of 13 weeks each (12 weeks for instruction and one week for review and examinations), with a two-week vacation after the first two terms and a nine-week vacation after the third.

- New textbooks for students and guides for teachers are being produced.

- The new curriculum will be introduced in grade one during the 1985/86 school year.

Each class period in Somali schools will be of 40 minutes duration. Different subject areas and the allocation of class periods to each is shown in Table 4.1 on the next page. Each geographic region prepares its own timetable, taking into account the local conditions. Schools generally start around 7:00 a.m. and end around 1:00 p.m. Each period allocated in the syllabus indicates a lesson. Therefore, if a subject has six lessons per week, it will have 216 lessons (6 x 36 instructional weeks) every year. In

TABLE 4.1

Different Subject Areas and Allocations of Class Periods

SUBJECTS	GRADES 1-4	5-6	7-8
Somali	7	7	6
Arabic	7	7	6
Religion	5	5	5
Math	6	7	7
Science	6	7	7
Social Studies	6	6	6
Health Education	3	3	2
Physical Education	2	2	1
Environmental and Practical Studies	-	2	2
English Language	-	-	2
	42	46	47

Note: Each Period: 40 minutes instruction

1 period per week: school cleaning

the new first grade textbooks, each lesson for each subject has a two-part code number. The first part refers to the instructional week; the second part, to the lesson.

Somali is the medium of instruction for all school subjects, except for Arabic and Islamic Studies (conducted in Arabic) and English for grades 7 and 8 (conducted in English).

The syllabus accompanying the New Curriculum has four sections:

- objectives of the primary cycle curriculum,
- general objectives for each subject for the full primary cycle (grades 1-8),
- general objectives for each grade level, and
- specific objectives for each grade level.

The evaluation system in the New Curriculum specifies annual examinations for each grade. The examination will be based on specific objectives for the grade level. A student scoring 50% or above is promoted to the next grade. Six subject areas are compulsory pass subjects: Somali, Arabic, Islamic Studies, Mathematics, Science, and Social Studies. Failure in any of these subject areas means failure in the whole examination.

A Review of Somali Textbooks and Instructional Materials. This study reviewed Somali textbooks for primary, secondary, primary teacher training, secondary teacher training, and nonformal education. Some general conclusions of this review are presented below:

- There is a marked trend toward quality improvement in the textbooks. Grade 1 textbooks from CDC are especially superior to any earlier textbook.

- The quality of instructional materials varies, even within the same level of education. For example, the "self-study teacher training assignments" developed by IITT are significantly superior to the teacher training texts used in Halane. Similarly, the English text used at Halane suffers from inadequate content, poor instructional design, and illegible reproduction. In contrast, the new English textbooks produced under the cooperative project between the British Council and the MOE are excellent.

- The new textbooks for grade 1 have excellent illustrations and reproduction quality.

- Text illustrations can be improved through the application of a few basic principles of visual literacy and instructional message design. For example, the message in many of the illustrations can be presented much more clearly and directly. Various graphic devices can be used for emphasizing the critical attributes of concepts and for deemphasizing irrelevant attributes.

- The scope and sequence of the new grade 1 textbooks appear to be tightly structured, almost like programmed teaching materials (see 4.3.3).

- Each page of the grade 1 text is coded with the instructional week and the lesson number, thereby programming the instructional progress through the materials. Considering the magnitude of teacher and student absenteeism in schools, such tight structuring of all days of the school year appears to be too optimistic and rigid.

- Teachers guides accompanying the new textbooks for grade 1 deserve special credit for their comprehensiveness and ease of use by teachers. These instructions make the materials appear close to the programmed teaching format which has been successfully used in primary classrooms of developing nations.

- The content in all the grade 1 texts appear to be accurate and adequate. Curriculum design consultants have provided excellent contributions from the subject matter point of view.

- The new grade 1 texts, in contrast to the older and foreign textbooks, are strikingly Somalized. The content, illustrations, and examples are all drawn from the Somalia context. This makes the materials more meaningful to the children in the primary schools.

- There is room for improvement in the new textbooks from an instructional design point of view. Simple application of a few principles of instructional design (e.g., active learner participation, logical sequencing, optimum step size, clearer presentation of information, more reinforcing (instead of redundant or conflicting) combination of words and pictures, appropriate feedback, proper selection and sequencing of examples, and built-in test items) would increase the efficiency of these textbooks.

- Although antiquated and inefficient, several textbooks appear to be available for secondary schools. In general, the content load in these texts are excessive and alien to the students' environment. The material is also abstract and theoretical. (These problems have already been identified by the MOE and they are likely to be rectified when CDC undertakes reforming the secondary school curriculum.)

- The availability of several secondary school textbooks suggests an interim solution before a comprehensive curriculum reform is undertaken: The existing texts can become the core for a temporary instructional system with adjunct programmed materials and methods.

Other Instructional Development Activities. In addition to the curriculum and instructional development activities at CDC, a number of formal and informal instructional design activities are undertaken in Somalia. These include the following:

- Women's Education Service (Department of Nonformal Education) conducts a series of preservice and inservice courses for family life teacher training at its Training Center in Moqdisho on such topics as food and nutrition, health and sanitation, child development, home and resource management, textiles and clothing, handicraft, literacy, community development. The Women's Education Service develops curriculum and instructional materials to support these courses.

- Several faculty members at the Somalia National University's College of Education at Lafoole are developing their own class handouts and instructional materials. An interesting approach to instructional development at Lafoole is to assign a project to groups of senior students which requires translation of sections of English texts. This approach results in learning by the students and gradual accumulation of Somali texts for use by future students. However, lack of typing and duplicating facilities hinder large-scale outputs from this efficient approach. The few edited compilations of student translations available are almost unreadable due to poor duplication.

- The Technical Teacher's College at Moqdisho has been conducting a number of in-house faculty development programs under the UNDP project. These programs are related to curriculum development, teaching-learning processes, and evaluation. One outcome of a recent seminar has been the development of useful documentation. This approach can be replicated in future for producing relevant instructional materials.

Relationship to the Five-Year Development Plan. The five-year development plan (1982-1986) of the Somali Democratic Republic contains several implications for instructional materials and curriculum development. Of the six objectives in the MOE, the following have direct relevance to instructional materials development:

- improvement in the content of the educational programs,
- increasing the effectiveness of the educational process, and
- diversifying the postprimary education in order to provide the country with an enlarged number of trained students in the various levels of the manpower requirements.

Of the 15 projects identified under this five-year plan, the following have significant instructional material and curriculum development components:

- primary education (general),
- secondary education (general),
- technical education,
- vocational education,
- primary teacher inservice training, and
- strengthening the Arabic language.

One of the projects under this five-year plan (Project No. 10) is specifically aimed at the production of curriculum materials, including the production of audiovisual aids and the printing of supplementary and reference materials. As a part of the justification for the project, the plan document states:

> One of the major qualitative constraints on our educational system is a general lack of instructional and reading materials appropriate to new educational needs, particularly to the needs of the rural youth. Except for textbooks, there is little supplementary materials available in our schools. In the present situation, the teacher, mainly in remote areas, performs his duties without assistance from supplementary or reference books adopted to the new integrated syllabi. This lack of supplementary instructional materials greatly reduces the teacher effectiveness and restricts him to traditional lecturing.

The general objectives for this project includes the following:

- design and develop teaching materials and to produce a variety of instructional and reading materials, and
- to prepare and implement a series of inservice training workshops on the effective utilization of instructional technology.

At a total cost of So. Sh. 4,400,000, this project was designed to undertake the following activities:

- proper furnishing of the existing Teacher's Aid Production Unit,
- preparation of exemplary audiovisual materials, and
- pretesting of these materials at the regional level.

The recommendations in this chapter reinforce the goals and activities of this Five-Year Plan and of the next one. In the sections that follow, several recommendations in five priority areas related to instructional materials and curriculum development are presented and discussed.

4.3 RECOMMENDATIONS

4.3.1 FIRST PRIORITY: Improve the Production and Distribution of Instructional Materials: Recommendations 1-3

Recommendation 1: Provide alternative sources for timely printing and production of instructional materials.

Recommendation 2: Develop and implement a system for the nationwide distribution of instructional materials for primary and secondary grades.

Recommendation 3: Develop and implement a system for the storage, distribution, and retrieval of instructional materials in schools.

Description. A major approach to the enhancement of educational quality in Somalia is the use of instructional materials. Through the efforts of the Ministry of Education and through the curriculum development project at CDC, Somalia has prototype versions of effective textbooks and teacher's guides based on the New Curriculum for the first grade. If implemented in primary schools, these textbooks are capable of dramatically improving the efficiency of the educational system. However, before the New Curriculum can be implemented, the textbooks have to reach the classrooms. Before that, they

have to be printed in sufficient quantities. In the absence of an efficient and reliable production and distribution system, none of the new textbooks (or even the old ones) can have any impact.

The official policy of MOE is that each student in each grade will receive a free textbook in each subject area. The situation regarding the availability of textbooks in the Somali classrooms is ambiguous. In some schools in Moqdisho and in neighboring locations (such as Afgooye) students reportedly receive textbooks; however, earlier textbooks fail to reach many classrooms elsewhere in the country.

Although the MOE textbook storage facility appears to have a systematic procedure, record keeping is minimal and unreliable. Large quantities of primary and secondary textbooks are stored in a disorganized and unprotected manner. Beyond this facility, the procedure for the distribution of textbooks is unclear. They are presumably transferred from the State Stores (at the Press) to the MOE Stores, to the REOs, to the DEOs, and finally to the schools, classrooms, and students.

There is consensus that the actual textbook distribution system falls short of the ideal, due to a number of factors:

- lack of transportation facilities,
- lack of fuel for transportation,
- absence of a systematic procedure for distribution,
- lack of trained personnel to handle the distribution system,
- lack of experience and expertise among REO and DEOs in the distribution of textbooks,
- the enormous quantities of textbooks involved,
- lack of reliable data on textbook requirements, and
- lack of clear delegation of responsibilities.

The printing/publishing picture appears equally pessimistic. Somalia does not have a history of publishing; it lacks the infrastructure available in some other African countries for the publishing industry to thrive. The

State Printing Agency produces high quality materials, but it is very busy handling the printing load for all agencies of the government. To meet the deadline for the distribution of the New Curricula, this agency is scheduled to work during nights to print the grade 1 textbooks (which have been ready for some months now).

It is not only at the State Printing Agency, but also in most Somali institutions that reproducing and publishing suffers from major obstacles. At the Somalia National University's College of Education at Lafoole, for example, the lack of duplication facilities is hampering all attempts at preparing instructional materials. Even at CDC, the new offset equipment, set up to produce limited number of copies of instructional macerials for formative evaluation, is not fully functional.

We do not have a clear picture of the availability and the capabilities of private sector presses in Somalia. In general, however, the lack of an efficient approach to printing, publishing, storage, and distribution of textbooks could undermine the entire New Curriculum project, negating the previous efforts and expenditures. Because of this critical importance, we place the production and distribution of textbooks at the highest priority, even ahead of their design and development.

The three recommendations in this priority area call for improving the production and distribution of textbooks and other instructional materials. Assuming that textbooks have been developed by some agency such as CDC, Recommendation 1 calls for alternative approaches for printing and publishing. Assuming that this task is accomplished, Recommendation 2 calls for organizing, packaging, storing, and distributing textbooks to all schools--including schools in remote regions. Assuming that the schools have received the textbooks, Recommendation 3 completes the cycle: the distribution of the textbooks to the students and other instructional materials to the teachers in the classroom. Taken together, the three recommendations call for the

development and implementation of a comprehensive production and distribution system for all instructional materials.

Potential Problems. In attempting to increase the efficiency of the textbook production, storage, and distribution system, there may be two problem areas: reducing the ambitious goals and replacing the existing system with a radically different one.

The goal of distributing a free copy of each textbook in each subject area to each student in each grade each year is an ambitious one. Even the most conservative cost estimates based on the New Curriculum textbooks for grade 1 suggest that such a goal may not be cost-feasible in the present economic condition. It may be necessary to reduce the number of pages, distribute shorter excerpts to students, have them share textbooks, have them return the books at the end of the school year, or impose other cost-reduction strategies. None of these approaches may be popular, but efficient distribution of a modest number of books is more useful than no distribution of a large number.

Current inefficiencies in the production, storage, and distribution systems indicate the need for a complete reorganization. This activity may also be unpopular with the personnel maintaining the existing system. Therefore, care must be taken to ensure that the new system is as compatible with the old one as possible.

Action Plan. This section presents a tentative action plan for implementing the three recommendations in this priority area. Details of this plan will be modified during the actual implementation, based on the immediate needs and resources.

1. Systems Analysis. In this priority area, there are three major subsystems of printing, storage, and transportation. The printing subsystem is currently required only at the national level; the other two subsystems are required at the regional, district, school, and classroom levels. The first step in the action plan is to analyze the requirements, characteristics, interrelationships, inputs, processes, outputs, and levels of various subsystems involved in the efficient production and distribution of textbooks and other instructional materials.

2. Cost Analysis. A related analysis is required to determine the cost of the current goals and procedures for textbook distribution. At the end of this step, a realistic estimate could be made of the relative costs and feasibilities of the current approach and various alternatives.

3. Realistic Goals and Objectives. Armed with the information collected during the two preceding analyses, a set of realistic (i.e., affordable) goals and objectives for the three recommendations in this priority area could be established. During this step, work may proceed backward from the last recommendation (distributing books to the students) to the regional distribution and then to centralized publishing. At the end of this step, a specific set of targets to be achieved could be identified.

4. Setting Up Procedures. In this step a set of systematic procedures is developed to achieve the goals specified in the previous step, within the resources and constraints identified in the first two steps. At the end of this step, alternative approaches are developed and the optimum one selected on the basis of feasibility and cost considerations.

5. Troubleshooting the System. During this step, a fault-tree analysis (FTA) is conducted. The fault-tree analysis is a logical procedure for finding out why a project may fail and how to take appropriate precautions. In this step, the analysis involves beginning with a final objective (such as books in the students' hands), working backward to identify what things could go wrong (such as headmasters not distributing the books, roads not usable because of rains, lack of trucks to carry the books, etc.), and the probabilities of each potential obstacle. This process is repeated at different levels of the recommended procedure to identify all potential problems. At the end of this step, production and distribution system are fine-tuned to minimize potential failure.

6. Specifying Subsystem Requirements. During this step the requirements for various subsystems are identified. At the end of this step, the personnel, buildings and facilities, equipment, budget, and timelines for printing, storage, and distribution of textbooks are identified at various levels.

7. Tryout and Revision. The final system should be tried out in a limited scale in a few regions to work out the details, particularly of the transportation subsystem. Five regions (Lower Shabelle, Middle Shabelle, Northwest, Adwal, and Benaadir) have been suggested for this tryout in an MOE proposal. Based on the data from this tryout, the system should be suitably modified.

8. Implementing the System. All physical facilities and equipment have to be set in place during this stage. The key people in various regions, districts, schools, and classrooms (from the MOE official to the student in a remote region) must be oriented and trained to participate in the new system.

Alternative Strategies. In this section alternative strategies are identified for implementing the recommendations in this priority area.

Private Versus Public Sector. At least the two subsystems of printing and transportation could be entrusted to the private sector. We do not have accurate data on the capabilities of private printing agencies in Somalia, but their use in the publication of textbooks and other instructional materials should be systematically explored. Transportation of goods by trucks appears to be an established procedure in Somalia, and this system might also be utilized for the transportation of textbooks.

Existing Organizational Structure Versus New Ones. A decision should be made whether to improve the existing MOE structure for the production and distribution of instructional materials or to design an entirely new structure. It is obvious that the traditional structure does not give the highest priority to textbook distribution because of multiple responsibilities, heavy workload, and limited staff. If textbook distribution is to receive the attention it deserves, a new organizational structure should be implemented as soon as possible. This does not rule out the possibility of utilizing existing MOE units and voluntary agencies whenever appropriate.

Distribution Pattern. The question of what exactly is to be distributed to whom is a critical one. The system should designate which materials are given to each student and which ones to classrooms. The decision in this area should be made primarily on the basis of cost-effectiveness.

Distribution of Costs. At present, students are supposed to receive the textbooks free of cost. However, some types of fees are apparently charged in some schools. Some textbooks may also be purchased in the markets. Completely free distribution of the textbooks may be at an exorbitant cost, especially when the new textbooks became available. A formula for sharing textbook costs among the MOE, local community, and parents should be worked out, permitting reallocation of resources now committed to providing texts.

Specific Procedures. The exact procedures for storage, inventory control, record keeping, and distribution should be developed carefully so that the system can make accurate projections and plans based on reliable

data. Potential use of microcomputers in this system should be studied carefully. MOE Planning Department personnel have been provided microcomputers and trained in their operation.

Contribution to External Efficiency. If primary education in Somalia has external efficiency, then it is obvious that the distribution of textbooks (which support primary education) contributes directly to this efficiency. In addition, the New Curriculum for primary schools is designed to improve the external efficiency. This objective cannot be achieved if the textbooks that operationalize the New Curriculum do not reach the classrooms.

Contributions to Internal Efficiency--Teacher tools. Textbooks are the most important tools of the trade for the teachers. The efficiency of classroom teaching, especially by untrained and undertrained teachers, can be improved by making effective textbooks available in their classrooms.

Reducing Dropouts and Absenteeism. Textbooks are important artifacts associated with schooling. Systematic provision of textbooks to students will encourage them to attend schools regularly and their parents to support such schooling. Evaluative data from textbook distribution activities in Liberia suggest that teacher absenteeism is also reduced when textbooks are available in schools.

Increased Learning. Several studies on schooling in developing nations indicate a high positive correlation between the availability of textbooks and achievement of students. Improved textbook distribution will result in improved learning in Somalia schools.

Somalization of the Curriculum. A major result of the New Curriculum is to make learning in the primary grades more meaningful and motivating through the use of content, illustrations, and examples which are relevant to the students' environment. This result can be achieved only if the new textbooks reach the classrooms.

Flexible Use of Teacher. A major inefficiency in Somali schools is the assignment of several teachers to the same classroom--because of the narrow

specialization by teachers (there is one teacher per class up to Grade 4). If effective textbooks are available in the classrooms, it should be possible for a nonspecialist teacher to handle different subject matter areas. This will permit flexible assignment of teachers to classrooms, and increase the efficiency of their performance. It would also permit the elimination of redundancies within the system (see pages 2-19).

Contribution to Access and Equity. Children in remote regions of Somalia are handicapped by teacher shortages and lack of facilities. An additional inequity is their reduced access to textbooks. Accomplishment of the recommendations in this priority area will increase the probability of textbooks being distributed to all parts of the country and reduce this inequity.

Cost Considerations--Developmental Costs. The recommendations in this priority area call for preliminary systems and cost analyses of production and distribution of textbooks and for the development and tryout of an improved system for distribution. Cost components for the analysis and development of the system are shown in Table 4.2. The tryout and revision of the system will involve additional one-time costs. A tentative budget for donor assistance from the MOE is reproduced as Table 4.3.

TABLE 4.2

Cost Estimates for Analysis and Design
of Production/Distribution Systems

1. INPUTS BY DONORS

PERSONNEL
2 Technical Advisors, 4 months each
Somali Support Staff (Drivers, Typists, etc.)

MATERIALS AND EQUIPMENT
Word processing equipment

OTHER
Travel (2 R/T airfare from the US to Somalia)
In-country Transportation
Per diem for Technical Advisors (8 months)
Postage and telephone
Duplication

2. INPUTS BY SOMALI GOVERNMENT

PERSONNEL
4 Somali Counterparts from MOE

FACILITIES
Office space for Technical Advisors

EQUIPMENT AND MATERIALS
Office supplies
Duplicating equipment and supplies

OTHER
Administrative support costs
Vehicles for Technical Advisors and operating costs

TABLE 4.3

Illustrative Budget for Tryout of Textbook Distribution System

1. WORKSHOP ON THE TEXTBOOK DISTRIBUTION SYSTEM
Number of participants 47
Number of days 3

PER DIEM

26 participants from Regions			
Meals	300		
Lodging	100		
Incidentals	100		
So. Sh. 500 x 3 days x 26		39,000	
11 participants from Moqdisho			
So. Sh. 100 x 3 days x 11		3,300	
10 participants from MOE			
So. Sh. 500 x 3 days x 10		15,000	
TOTAL			57,300

TRAVEL

26 participants from Regions		
So. Sh. 100 x 26	2,600	
11 participants from Moqdisho		
So. Sh. 200 x 11	2,200	
9 participants needing airfare (R/T Hargeysa-Moqdisho)		
So. Sh. 5000 x 9	45,000	
TOTAL		49,800

TRANSPORTATION OF TEXTBOOKS

Fuel (So. Sh. 20 per liter; 6 km. per liter)
Lower Shabelle
7 districts - 1000 km.
Middle Shabelle
4 districts - 2000 km.
Northwest
3 districts - 2000 km.
Awddal
3 districts - 2000 km.
Benaadir
13 districts - 500 km.
TOTAL - 7500 km. Round trip - 15,000 km.

Fuel - 15,000/6 = 2,500 litres
2,500 liters x So. Sh. 20 = 50,000

DRIVERS	18,000	
MAINTENANCE	16,000	
SECRETARIAL/RECORD KEEPING	12,000	
TOTAL		96,000
GRAND TOTAL		So. Sh. 203,100

Recurrent costs. Printing of textbooks and their distribution involve major recurrent costs. Because neither of these activities have been comprehensively undertaken in the past, very little data is available about their cost components. In addition, alternative approaches to printing are so numerous (in private sector, public sector, and various combinations) that it is difficult to identify and to estimate relevant cost components. Simple rule of thumb computations for printing, based on the number of new textbooks and the number of pages of these textbooks, suggest that printing costs may make it difficult to achieve the goal of supplying a textbook for each student each year in each grade in each subject area. Plans for subsidizing, renting, or charging a user fee for textbooks may have to be created to ensure cost-feasibility (see pages 4-24).

Cost components for storing, sorting, packaging, inventory control, transportation, and distribution of the textbooks are also too diverse for recurrent cost estimates. These estimates will be a major output of the analysis activities identified in the preceding section.

One fact is clear about the cost of textbooks: Somalia cannot afford the cost of lack of textbooks in schools.

4.3.2 SECOND PRIORITY: Strengthen Instructional Systems Design Capabilities: Recommendations 4-6

Recommendation 4: Develop suitable models for instructional systems design in Somalia.

Recommendation 5: Provide inservice and preservice training in instructional systems design.

Recommendation 6: Strengthen CDCs role as an instructional systems design unit.

Description. Several institutions in Somalia are engaged in the development of instructional materials. Some effective materials have been produced, especially by the Ministry of Education's CDC which has developed new primary school textbooks, by IITT which has developed inservice teacher-training assignments, and by the Women's Education Service which has created

preservice training courses in a number of areas. Instructional materials design is critically needed to support the plans for teacher training for primary and secondary schools, for revising the secondary school curriculum at CDC, and for providing technical training at the Industrial Vocational Training Center, and for adult basic education at the Division of Nonformal Education. In short, instructional materials design is in great demand in all present and future educational and training projects in Somalia.

Most instructional design work being done in Somalia is of acceptable quality; it can, however, be significantly improved through the systematic application of the principles and procedures of instructional systems design.

The evolving discipline of instructional systems design deals with methods and materials, programs and products that enable a specific group of learners to achieve specific instructional goals. This multidisciplinary technology uses principles from such diverse disciplines as instructional psychology, learning theory, educational media, systems approach, communications theory, and sociology to derive procedural models for the analysis, design, evaluation, and implementation. The analysis procedures include needs analysis to identify priority areas with potential payoff, systems analysis to identify the resources and constraints in the nation, the region, the school, and the classroom; and instructional analysis to derive specific behavioral objectives related to the tasks and the content to be taught. The design procedures include the selection of the most appropriate medium (such as print, radio, or teacher), and appropriate strategy (such as programmed instruction for correspondence schools and simulation/roleplay for teacher training); presenting information to the learners; keeping them actively responding; providing them with useful feedback; sequencing the content and activities; and ensuring the transfer and application of what has been learned to real-world situations. Evaluation procedures include review and revision of materials by experts familiar with subject area, language, classroom realities, and teacher characteristics; improvement of the materials

on the basis of feedback from students, teachers, and others through tryout sessions; and validation of the total instructional system through controlled field tests. Implementation procedures include the development of training and orientation materials for teachers and others; installation of the new system; monitoring the system to provide technical assistance; and institutionalization to ensure continued use of the system without external support. Capabilities in these areas of instructional systems design will upgrade the Somali curriculum writers from technicians following a pre-designated blueprint to technologists who create new systems.

An instructional systems design model for developing nations is described in Appendix IX. Although such standard models are available in the literature, a version which meets the special needs in Somalia must be created. The first recommendation in this priority suggests this activity. The second recommendation suggests that instructional systems design competencies be taught through inservice workshops to curriculum writers at CDC and other institutions and through preservice training to education majors at the Lafoole College of Education. To keep this technology readily available and constantly updated, the third recommendation suggests that the CDC be made a centralized clearinghouse.

Potential Problems. Before looking at the potential benefits of increased instructional systems design capabilities in Somalia, problems that may arise through a rigid pursuit of this priority are discussed below

Resource Requirements. In contrast to writing a textbook, instructional systems design requires a significantly increased amount of time and money investments up front. The cost-effectiveness of this approach results in long-term savings provided heavy short-term resource allocation is available. For example, the analysis activities and the evaluation activities consume as much time and money as do the writing (design) activities. These initial investments ensure the development of a cost-effective, reliable, and high-quality product. However, if agencies are unable (or unwilling) to make the

necessary commitments, instructional systems design is likely to result in incomplete and inefficient products. Given the limited fiscal resources in Somalia, this indicates that a major investment by a donor agency would be necessary.

Obsolete Technologies. Instructional Systems Design (ISD) has undergone significant changes in recent years, especially through inputs from cognitive psychology, newer technologies, and the economics of education. Many older versions of ISD still exist and are frequently rediscovered as the latest technology. Care should be taken to ensure that Somalia institutionalizes the state-of-the-art technology in this area.

Inappropriate Technology. ISD is strongly associated with developed nations, high technology, and elimination of teachers. A transfer of such an approach is doomed to fail in most developing nations. A number of appropriate technologies have evolved in developing nations. Some of these are described in Appendix X. The type of instructional systems technology used and taught in Somalia must be appropriate for developing nations and be suitably adapted to meet the local needs, resources, and constraints as suggested in the first recommendation.

Action Plan. This section presents a tentative action plan for implementing the three recommendations. Details of this plan will be modified during the actual implementation, based on the immediate needs and resources at that time.

1. Needs Analysis. The first step in this priority area is to conduct a survey of current and future projects in Somalia which involve curriculum and instructional materials development, and which could benefit from the systematic application of ISD. This activity will permit the forecast of demand for ISD capabilities in Somalia and identify the major variables for creating appropriate models for local use.

2. Training CDC Personnel. A core group of CDC personnel will be trained in ISD principles and procedures in a six-week workshop in Somalia. Concurrently, one or two Somalian educators will be sent for overseas training in this area. This step will create the core change agents for implementing ISD in Somalia.

3. Creating ISD Models for Use in Somalia. During this step, two technical advisors with experience in installing ISD in developing

nations will work with the Somali specialists to create an ISD model for use in Somalia with appropriate variations. This step identifies suitable procedural models for use in different types of curriculum and instructional design activities in Somalia.

4. Inservice Training in ISD. The core staff at CDC will conduct a series of inservice workshops to train curriculum writers in ISD competencies. They will begin with the training of their own staff members who are working on the revision of primary and secondary school curricula and instructional materials. CDC will then train personnel in other projects which require ISD skills.

5. Establishing CDC as an Instructional Design Unit. Gradually CDC will establish a special unit for ISD as one of its divisions. This unit will provide inservice training in ISD skills as indicated in the previous step. In addition, the ISD unit will also undertake actual instructional systems design for other projects in Somalia. Another function of this unit will be to constantly evaluate innovative strategies from both inside and outside Somalia, and act as a clearinghouse for upgrading local capabilities.

6. Preservice Training in ISD. At an appropriate time and when resources permit, education majors at the Lafoole College of Education may be given the option of majoring in ISD. This step will ensure the availability of competent personnel to meet the needs of ISD activities in the public and the private sector.

Alternative Strategies. In this section different approaches to achieving the goal of increased capabilities in ISD are compared. The alternative approaches are presented under five different topics.

Training of Core Personnel. Basic training in ISD competencies can be provided by conducting a workshop in Somalia or by sending a select group of Somalis for overseas training in the U.S. The former approach is likely to result in relevant and rapid training, while the latter will produce more comprehensive training and increased credibility on the part of the returning graduates.

Selection of Media and Instructional Strategies. Basic ISD skills are generalizable to different educational media (such as print or radio broadcasts) and to different instructional strategies (such as programmed instruction or training workshops). In creating a local model, it is important to identify the appropriate media and strategies for Somalia with regard to fiscal constraints so that the ISD training can be easily transferred to fulfilling local needs.

Generalized Versus Specialized Training. Analysis, design, evaluation, and implementation are the four major components of ISD. Each component has a number of principles and procedures associated with it. ISD training in Somalia can be focused on creating specialists in one area (such as task analysts or evaluators) or generalists in all areas. Each approach has its own advantages and disadvantages. Similar decisions have to be made regarding the relative advantages of training people to generalize across all subject areas or to specialize in one subject area (such as instructional system designer in mathematics). Another choice is between generalists in different media or specialists in a specific medium (such as scriptwriters for radio programs).

Centralized Versus Decentralized ISD. A decision has to be made regarding whether all ISD activities should be centralized in one institution (such as CDC) or should be decentralized and carried out by ad hoc teams attached to different projects. The advantage of the former approach is that a team of expert and experienced instructional systems designers work on a variety of projects. The disadvantage is that the team may be overcommitted and unfamiliar with the needs of a specialized project. The disadvantage of a project team is the waste of their experiences and expertise once the ISD activity is completed.

Relationship to the Five-Year Development Plan. Increased ISD capabilities in Somalia would provide critical support to a number of projects in the current and the next five-year development plan. Here are some sample activities which will benefit from systematic ISD:

- revision of intermediate and secondary textbooks,
- development of English language textbooks,
- strengthening of the relationship between instructional materials and teacher training,
- diversification project,
- curriculum analysis and revision,
- health education project,

- teacher training project, and
- environment and practical studies.

Contribution to External Efficiency. Two major contributions to external efficiency are likely to result from increased ISD capabilities: creation of more demand-driven curricula and the potential marketing of ISD skills abroad. Needs analysis activities in ISD models require and provide strategies to match the curriculum with the external demands of workplace. As a result, MOE will be able to obtain more external valid curricula, especially in technical and vocational education. In addition, the demand for ISD capabilities in Africa and other developing areas of the world is heavy, and the supply meager. It should be possible for the key personnel at CDC to provide technical assistance to other developing nations in the near future when they have acquired sufficient experience and expertise.

Contribution to Internal Efficiency. This study has described how increased ISD capabilities will contribute to a number of projects in the current and future five-year development plans. This is a major contribution to internal efficiency. The projects listed in the earlier section are all related to the activities at CDC. There are many other similar projects in other units of the MOE and elsewhere. All these projects have critical components which can benefit from increased ISD capabilities.

According to a CDC report, CDC is overstaffed with respect to present work output. At the same time, CDC is understaffed with regard to qualified curriculum developers. The proposed training activities in this priority area will rectify this imbalance and increase the internal efficiencies of CDC. Training is recognized as the highest priority during the next plan period at CDC. This priority will focus on providing effective training.

CDC and other institutions engaged in curriculum and instructional materials development in Somalia appear to focus on some components of the instructional systems and ignore others. For example, excellent textbooks are not efficiently used because aspects of the implementation component are

ignored. There are good audiovisual aids in the form of charts and posters, but they are not integrated with the textbooks. ISD focuses on the total systems: not only the components, but their interrelationships and their integration. As a result, this approach will improve the total efficiency of educational efforts.

Many instructional materials from developed nations--chiefly the U.S.A. and Italy--are being used by the various faculties of the Somalia National University. Translating them into Somali will not solve the problems students face with them. Most of the examples used in these texts will still remain alien. ISD strategies include appropriate techniques for cultural adaptation of existing texts. These strategies can also be used to adapt rather than adopt instructional packages from other African nations. The cost of translation and adaptation will be significantly less than that of developing instructional materials from scratch. ISD strategies will ensure that the educational effectiveness of adapted materials are comparable to those of original materials.

CDC currently receives technical assistance from various agencies in different subject matter areas, such as health education. However, little or no technical assistance is provided in the area of ISD. The present set of recommendations will remove this imbalance. Writers who are trained in ISD procedures will be able to work in any subject area to produce different types of instructional materials. These generalizable skills will increase the internal efficiency of the system.

Contribution to Access and Equity. Instructional systems technology strategies will enable MOE to produce effective instructional materials for special groups of students, such as women, nomads, and adults. ISD strategies prescribe appropriate rules for taking into account the special characteristics of these groups so that optimal instruction is provided. There are also formative evaluation techniques which enable designers to effectively modify instructional materials designed for one population to suit the needs

of other populations. Thus, the beginning reading materials in Somali for the grade 1 can be adapted for adult learners in a functional literacy program.

Cost Considerations

Developmental costs. Technical assistance is needed for conducting needs analysis, developing appropriate Somali ISD systems, and initial training of CDC personnel. Estimated developmental costs for these activities are listed in Table 4.4.

Long-term participant training at the master's or at the doctoral level can be undertaken at any U.S. educational institution with combined strengths in the areas of ISD and developing nations (such as Florida State University, Indiana University, or Syracuse University). Training costs can be estimated at the rate of U.S. $10,000 per year, plus U.S. $5000 per person for travel and transportation.

Recurrent Costs. The ISD unit at CDC should be covered by the annual recurrent budgets of MOE. Various costs can also be charged against different sponsored projects for which the ISD unit develops instructional systems.

TABLE 4.4

Cost Estimates for ISD Analysis, Design and Training

1. INPUTS BY DONORS

PERSONNEL
2 Technical Advisors, 4 months each
2 Workshop Leaders, 2 months each
Somali Support Staff (Drivers, Typists, etc.)

MATERIALS AND EQUIPMENT
Library Materials: Texts, Reference Materials, and Sample materials on ISD
Media equipment (not currently available at CDC)
Word processing equipment
Individual copies of texts and handouts for workshop participants

OTHER
Travel (4 R/T airfare from the U.S. to Somalia)
Transportation
Per diem for Technical Advisors (12 months)
Postage and telephone
Duplication

2. INPUTS BY SOMALI GOVERNMENT

PERSONNEL
6-10 Curriculum Writers at CDC

FACILITIES
Office space for technical advisors
Classroom space for conducting workshop

EQUIPMENT AND MATERIALS
Office supplies
Audiovisual equipment
Duplicating equipment and supplies

OTHER
Administrative support costs
Vehicles for technical advisors and running costs

4.3.3 THIRD PRIORITY: Improve the Quality of Primary School Materials: Recommendations 7-8

Recommendation 7: Design a programmed teaching (PT) system for the primary schools of Somalia.

Recommendation 8: Develop and implement a PT system for primary schools in Somalia.

Description. The new curriculum materials for grade 1 have two unique components: systematically sequenced content for the children and explicit instructions for the teacher. These materials lend themselves to a form of educational technology called programmed teaching (PT). Our recommendation suggests incorporating the new materials for grade one in a programmed teaching framework and modifying the design process for grades 2-6 materials to use the PT framework. This will enable MOE to build upon the strength of the new curriculum strategy in a consistent and cost-effective manner.

Programmed teaching (PT) has been successfully used in several developing nations to provide efficient education in primary schools. A description of one of the most recent applications of PT to elementary education in Liberia is given as Annex C. The basic principle behind the PT approach is to obtain more efficient teacher training and more reliable instructional quality through increased investments in instructional design. PT materials incorporate explicit instructions to the teacher with the text for the

students. PT materials specify both what is taught and how it is taught. They include information to be presented to the children (pictures, letters, words, sentences, arithmetic problems, scripts for oral presentations, etc.), systematically sequenced questions, correct answers, and learning activities. They also specify teaching activities for presenting information, asking questions, eliciting responses, judging the adequacy of responses, and providing corrections. PT materials are usually printed in a series of booklets called modules. Programmed teaching uses established principles from the earlier technology of programmed instruction such as behavioral objectives, logical sequencing, systematic design, small steps, active responding, immediate feedback, and appropriate corrections. However, it eliminates the limitations and costs associated with self-instructional programs which have been found to be inefficient with primary school children. Programmed teaching also retains the advantages of detailed teacher's guides, such as those accompanying the new Somali grade 1 materials. By integrating teacher instructions with the text, PT materials ensure their effective use.

In the new Somali textbooks for grade one, most components for creating a PT system are already present. The textbooks include the student components; the teacher's guides include the instructional component. Minor modifications are needed to provide more effective instructional design in the textbooks and more systematic teaching activities in the guides.

Potential Problems. Although large-scale evaluation studies of PT systems in developing nations confirm their ability to improve educational efficiency, a rigid application of this technology may result in undesirable outcomes. Based on experiences with PT systems, the following potential problems may be expected to arise:

Initial Investment. The initial investment required for developing a PT system would be high (see Cost Considerations, pages 4-52). Savings in recurrent costs would be achieved once the system had been developed.

Rigidity of the System. A single PT configuration may not suit the needs of different schools in Somalia. Similar but different configurations for different types of schools should be developed, such as a single-teacher-multiplegrades school, an urban school, a school for nomads, or an incomplete-cycle school.

Print Requirements. A complete PT system may demand printing and publication capacities far beyond what is currently available. Strategies for sharing instructional materials among students should be developed.

Personnel Requirements. Developing a PT system will require several competent instructional developers. The second priority recommendations regarding instructional developers should be implemented and several Team Leaders and writers are available at the MOEs CDC to carry out this developmental task.

Action Plan. This section presents a tentative action plan for implementing the two recommendations. Details of this plan would be modified during the actual implementation on the basis of the data from needs analysis and system analysis.

1. Preliminary Design of the PT System. This activity would involve key decisionmakers at CDC and two technical advisors figuring out the most appropriate, flexible configurations for the Somali PT system. These configurations are based on local needs, resources, and constraints. They incorporate the new Somali curriculum methods and materials in the most cost-effective fashion.

2. Initial Training of Team Leaders. This would be a six-week workshop during which a selected group of four or five senior curriculum designers at CDC would be trained on the principles and procedures of developing PT systems. The training would take place at CDC and will involve the actual production of PT modules. The Somali Team Leaders would also be trained in how to train PT writers and supervise their work.

3. Training of PT Writers. The training of CDC writers in the principles and procedures of developing PT modules would be conducted by the Somali Team Leaders trained earlier. This training would focuses on the actual production of PT materials.

4. Development of PT Materials. After the training, the writers and the Team Leaders systematically develop PT materials in different subject areas for a selected primary grade. The materials would be based on the new curriculum and the production process involves analysis, design, editing, revision, and production of PT modules by the CDC staff under the supervision of the Team Leaders.

5. Technical Review and Revision. After about six months of local developmental activities, two Technical Advisors review the work for a month. In collaboration with the CDC Team Leaders, the Technical Advisors design strategies to reduce or eliminate instructional design/production problems, to permit more efficient workflow procedures, to strengthen the instructional effectiveness of the materials, and to provide additional training.

6. Initial Formative Evaluation and Revision. When the first modules of the new PT system are available in a prototype form, they are tried out with a few representative students and teachers. This evaluation would enable planners to identify major problems and to make appropriate revisions.

7. Formative Field Testing and Revision. This activity would be undertaken by the Research Unit of the CDC and involves implementing the PT system in a given grade in representative schools during a normal school year. Based on the feedback from the students, teachers, and administrators, the system would be modified to improve its instructional efficiency.

Alternative Strategies. Programmed teaching is not a single prepackaged curriculum; it is a flexible system with many variables which can be adjusted to suit the local needs, resources, and constraints. During the initial stages of the PT system design activity, an optimum system for the Somalia primary schools would be -- and suitable variations for different types of schools devised.

Below are factors, identified through a series of questions, that must be considered in determining the Somali PT system and its variations.

Subject Area Variables. Which subject areas are to be taught through the PT approach? Should planners focus on the core skill areas (such as language and mathematics) or program all subjects in the primary grades? If the decision is made to convert the curriculum into PT materials in steps, which subjects should be first?

Time Variables. How many school days are available during the school year? What proportion of these days should be devoted to the core curriculum? How many class periods are available in a typical school day for PT sessions? Since the teacher cannot be expected to conduct PT sessions during the entire school day, what portion should be assigned to PT?

Classroom Variables. What is the typical class size? PT uses medium-sized groups (of about 15 students) for direct instruction and smaller groups (of about five students) for practice and review activities. How should the class be divided? What types of individual and dyadic activities should be assigned to the students?

Instructional Material Variables. How should the textbooks be divided into modules? What instructional materials should be supplied to the teachers? To groups of students? To individual students? In addition to printed texts, what reference materials (such as dictionaries and atlases) and audiovisual aids (such as charts and prerecorded cassettes) are required? What equipment for teachers (such as large blackboards) and for students (such as smaller blackboards for group activities) are needed?

Test and Examination Variables. What types of module tests and term tests should accompany the PT modules? How are these tests administered and scored? How are the test scores used for determining grades and promotion?

Teacher Variables. How should the teachers be trained to use PT materials? How does the role of the teacher change in the PT system? How are teacher absences handled? What is their entry level in skills and knowledge? What types of tasks should be assigned to these teachers?

Relationship to the Five-Year Development Plan. Activities in this priority area can be easily integrated with the proposed MOE activities--especially those of CDC--during the current and the next Five-Year Plan:

- A major development activity in the next plan is the reform of the primary curriculum. The PT system design and development can become a part of this reform.
- Staff development at CDC is a critical area in the Five-Year Plan. The training of PT Writers and Team Leaders can become a part of this CDC activity.
- An integral part of the PT system implementation activity is the orientation of the teachers to the use of the new curriculum materials. This fits within another proposed critical area in the CDC plans.
- The PT System includes its own teacher training component with the practical competencies related to the efficient use of the PT modules: presenting information to the students, posing questions, eliciting

responses, processing student answers, providing remedial instruction, etc. These activities can form the core of the proposed major developmental task for the CDC in the area of the teacher training curriculum.

Contribution to External Efficiency. The contribution of the proposed PT system to the external efficiency of Somalia primary schooling depends upon the relevance of the new curriculum to the demands of the workplace. Usually, the PT system design process has built-in procedures for deriving the curriculum from real-world demands and for ensuring that the content and skills taught to the children have optimal payoffs in the society. However, validation of external efficiency of the PT System--and of the reformed curriculum--requires systematic, long-term data collection, preferably by the Research Unit of the CDC.

Contributions to Internal Efficiency. Some of the major contributions of this priority area to internal efficiency have been identified earlier in the section dealing with the relationship to the goals of the next Five-Year Development Plan. Some additional contributions to internal efficiency are discussed below.

Overall Quality Enhancement. Two major priorities in primary education in Somalia are training teachers and developing quality instructional materials. The PT approach provides an appropriate technology for achieving both priorities.

Integration with Current Activities. CDC is in the process of analyzing the primary curriculum and designing new instructional materials. The PT approach can be easily integrated with their current activities and plans.

Linkage with Teacher Training. The Primary Teacher Training Curriculum is currently being revised. This provides an opportunity to incorporate orientation and training required for implementing the new PT system in the new teacher-training curriculum. Further, teacher training curricula consist of content and methodology. Programmed teaching specifies both of these and supplies the basis for a meaningful teacher training curriculum.

Efficient Monitoring of Teachers. The competencies required of a PT teacher are very specific and practical (such as presenting the questions from the module in the correct order or deciding which correction procedure to use). Teacher supervision and feedback also become very practical and specific. Headmasters and District Inspectors can be easily trained to observe teachers in the classroom and to provide useful feedback.

Reliable Implementation of Quality Curriculum. The proposed PT system will enable expert Somalia educators and their technical advisors at the CDC to make curricular decisions about what should be taught and how it should be taught. These decisions can be incorporated in the design of PT modules. The PT approach ensures reliable implementation of the curriculum in the primary schools.

Improvement of Examinations. Tests and examinations in the current Somalia primary education system are not highly efficient. Continuous student evaluation is built into the programmed teaching system. This provides an automatic record of an individual student's progress through the system. It also makes it easy to monitor the effectiveness of teachers as measured by the academic performances of their students.

Contributions to Equity and Access. PT systems enable planners to reliably implement high-quality curriculum in different types of schools. This will result in improvements in access and equity to education.

PT materials can be used with untrained teachers, teachers who have not completed their secondary schools, teachers who have failed the MOE examinations, and temporary teachers performing their national service. While the ultimate goal is to motivate highly competent teachers to work in remote nonurban areas, data suggests that most teachers prefer urban assignments. Since PT systems reduce variations in instructional efficiency due to individual variations among teachers, they permit equal access to quality primary education for all children irrespective of their geographic location and the type of school they go to. PT materials can take the major

responsibility for maintaining the quality of education even if the quality and qualifications of the primary teachers vary widely. In addition, different configurations of PT materials can be used in different types of classrooms (such as small-enrollment vs. large-enrollment classrooms). By selecting among individual, small group, and entire class use of PT modules, planners can achieve the most cost-effective and flexible arrangement for different types of primary schools in Somalia.

Cost Considerations. In this section components of the developmental and recurrent costs of programmed teaching systems are identified and discussed.

The developmental cost of the PT system is likely to be high and require external funding. However, once the system is implemented in Somalia, savings in primary education recurrent costs are likely to be high (along with the educational benefits).

Development Costs. PT is a materials-intensive system; these materials have to be systematically developed through a process which requires specialists in curriculum, instructional design, illustration, printing, evaluation, and teacher training. Fortunately, however, CDC has the necessary pool of personnel, facilities, equipment, and materials.

Before identifying the developmental cost components, some basic assumptions should be considered. The following assumptions are based on experience in developing PT systems in developing nations. They are used here for illustrative purposes only.

- The PT system will deal only with the six "compulsory-pass" subjects in the Somali curriculum: Somali, Arabic, Religion, Mathematics, Science, and Social Studies. Teachers will handle the other subjects through regular textbooks and conventional approaches.
- The PT system will be based on the 39-week school year under the New Curriculum strategy.
- PT materials will cover only the first four grades. The amount of programming of teacher behavior will gradually diminish (and student responsibility for learning will gradually increase) across the grades. In the fourth grade, transitional materials and activities during the final term will prepare the students for conventional schooling in subsequent grades.

- The PT development project will last for three years.
- The project will be integrated with the New Curriculum project at CDC.

Major developmental cost components for the project are identified in Table 4.5.

Funding sources for the external contribution could include UNESCO if the project were conceptualized as an expansion of the New Curriculum Project. The World Bank may also fund the project as a textbook project (since the PT materials represent a specialized form of textbooks). Some of the preproject analysis may be funded under the IEES Project as short-term technical assistance. Most local contributions can be obtained by integrating this project with the New Curriculum project and utilizing the existing personnel, facilities, and equipment at CDC.

Recurrent Costs. PT modules combine detailed instructions for the teacher along with illustrations and informational content for the students. As a result, the number of pages in PT modules could be three times as many as those in corresponding textbooks. In addition, the PT system also uses lengthy practice workbooks. However, the materials cost in a PT system is often less than that of a textbook system because of these two factors:

1. Only a small part of the instructional materials is supplied to individual students. The modules are used by the teacher with medium-sized groups of 15-20 students. Practice workbooks are shared by small groups of about five students. A classroom of 45 students requires only one set of PT modules and three sets of practice workbooks along with 45 copies of the student booklets.
2. A major cause of the wear and tear on a book is the number of times its pages are turned. Because the separately bound copies of different modules and practice workbooks are used only for a four-week period, and because they are not handled as frequently individual textbooks, their typical life span is five years.

Table 4.6 shows the comparative number of pages of textbooks and PT materials over a five-year period in a Somali first grade classroom with 45 students. The figures for the textbooks are based on the new first grade texts from CDC. Figures for PT material are based on the conversion of these

TABLE 4.5

Developmental Cost Components

1. PREPROJECT ANALYSIS AND DESIGN

EXTERNAL CONTRIBUTION

PERSONNEL
2 Technical consultants, 3 months each

TRAVEL
Travel, transportation, per diem

SOMALI CONTRIBUTION

PERSONNEL
3 Local instructional specialists for 3 months

FACILITIES
Office and secretarial facilities at CDC

2. INSTRUCTIONAL SYSTEMS DESIGN

EXTERNAL CONTRIBUTION

PERSONNEL
1 Resident PT Specialist, 39 months
6 Curriculum advisors, .25 time, 36 months
Technical consultants, 9 person months

FACILITIES AND EQUIPMENT
7 microcomputer-based wordprocessing systems
1 heavy-duty copying machine

OTHER
Travel and transportation expenses

SOMALI CONTRIBUTION

PERSONNEL
12 Instructional Designers (Writers)
3 Editors/Supervisors
6 Illustrators
6 Word Processors
2 Print Technicians
1 Production Manager
2 Clerical Staff

3. FORMATIVE EVALUATION AND REVISION

EXTERNAL CONTRIBUTION

PERSONNEL
Evaluation consultant (9 person-months)

SOMALI CONTRIBUTION

PERSONNEL
Teachers and students in selected schools

TABLE 4.6

Recurrent Costs Components

MATERIALS COSTS IN TERMS OF NUMBER OF PAGES

CONVENTIONAL TEXTBOOKS

6 subjects x 200 pp. = 1200 pp./student
Annual estimated cost per student = 1200 x .01 = US$ 12.00

PT MATERIALS

6 subjects x 10 modules x 60 pp. x 1 copy = 3600 pp.
Assuming 5-year life, annual number of pp. = 720 pp.
6 subjects x 10 workbooks x 40 pp. x 3 copies = 7200 pp.
Assuming 5-year life, annual number of pp. = 1440 pp.
6 subjects x 1 booklet x 50 pp. x 45 copies = 13,500 pp.
Total number of annual pp. = 15,660
Annual number of pp. per student = 15,660/45 = 348 pp.
Annual estimated cost per student = 348 x .01 = US$ 3.48

textbooks into PT format. Using the rule-of-thumb estimate of US$.01 per printed page, the per pupil annual cost for textbooks is US$12.00. For PT materials, it is US$3.48.

This is only one type of cost savings resulting from the use of the PT system. This system is optimized for a single teacher handling a classroom of 45 students--even if the students are at different grade levels. Hence, the teacher-pupil ratio in the PT classrooms is 1:45, compared to the current ratio of 1:27 in Somali primary schools. This increased ratio will eventually decrease the recurrent teacher salary costs.

Studies in Liberia and the Philippines indicate that unqualified teachers with four weeks training can produce learning achievements comparable to conventional teachers who have been trained for two years. (In the Philippines, children from the sixth grade were able to produce effective learning at the first grade with the use of PT materials.) At a later date, if there were a heavy demand for more primary school teachers, the PT system can help Somalia achieve significant savings in teacher training without any reduction in instructional effectiveness.

4.3.4 FOURTH PRIORITY: Improve the Quality of Teacher Training Materials: Recommendations 9-10

Recommendation 9: Develop a practical, relevant, and competency-based curriculum for teacher training.

Recommendation 10. Design a competency-based teacher training system for primary and secondary school teachers in Somalia.

Description. A competency-based teacher training (CBTT) curriculum identifies the critical performances of a teacher which have been empirically shown to be related to student learning and other desirable outcomes in the classroom. This curriculum specifies behaviorally stated objectives derived from these performances. The content, activities, and method of evaluation specified in a competency-based curriculum are directly related to the achievement of these objectives. Thus, in a CBTT curriculum, there are more likely to be courses on adapting a textbook to the level of the learners and asking classroom questions than on foundations of education and educational philosophy.

A competency-based curriculum is critically needed for teacher training in Somalia, especially for primary education. Interviews with students, teachers, trainers, and Ministry of Education officials suggest that the curriculum for teacher training is mostly academic, aimed at remediating deficiencies in subject matter areas taught earlier in the schools. A small component of the curriculum is allocated to professional teacher preparation.

Even this component deals with theoretical aspects of teaching, often based on outmoded concepts and irrelevant textbooks from developed nations. The current teacher training curricula do not appear to take into account the realities of different types of Somalia classrooms, especially those in rural areas. This state of affairs in the primary teacher training curriculum has been confirmed by review and analysis of the texts for Halane Teacher Training Program. The curriculum for secondary school teacher training at the Lafoole College of Education reflects the same priorities: academic subjects, theoretical courses, and a few units on teaching methods--without relevance to the learning by students or to the realities of Somalia classrooms. Further, at both levels of teacher training, practice teaching appears to have received a short shrift.

One notable exception to this trend is found in the work done by MOEs Institute for In-Service Teacher Training (IITT). Among their "self-instructional teacher training assignments" (which carry the major instructional responsibility) are such practical, competency-based topics as teaching mathematics to beginners, teaching addition and subtraction, and class management. A review of a few sample assignments reinforce this perception, even though there are some traditional, theoretical topics such as child behavior and educational psychology.

At the most fundamental level, teacher training reflects one of three different models of teaching: The natural teacher model assumes that if the teacher has thoroughly mastered what is to be taught, he or she will be able to automatically teach it to the children. This model assumes that the "how" of teaching does not have to be taught. Preservice teacher training under this model ensures that the potential teacher has the mastery of all subject areas. Inservice teaching concentrates on providing remedial instruction in these subject areas. The creative teacher model assumes that the "how" of teaching is important and that the best training provides teachers with basic principles of educational philosophy and psychology. Given these principles,

the teacher is expected to make curricular and pedagogical decisions regarding what to teach and how to teach it. In the creative teacher approach, both preservice and inservice training focus on the transmission of theoretical knowledge to the teacher so that he or she can transfer and apply it to classroom realities. The third model of teaching is structured teacher approach. This approach assumes that most of the what to teach (in terms of the intents, contents, sequence, and methodology) can be prespecified in a packaged instructional system (such as the new textbooks for grade 1). This how to teach should be very specific to the implementation of the packaged instructional system. Preservice teacher training in this approach consists of familiarizing the teachers with the components and the structure of the instructional system (contents as specified by the textbooks and activities as specified by the teacher's guides) and providing specific directions for implementing the new system. Inservice training focuses on identifying problems in the implementation process and providing solutions to them.

Current teacher training curricula in Somalia reflects a philosophy which lies between the natural teacher and the creative teacher models, somewhat closer to the former. In view of the recent significant shift in Somalia primary education toward a child-centered, practical curriculum, the basic model for teacher training needs to move between the creative teacher and the structured teacher models, closer to the latter. This is the intent of the two recommendations in this priority area.

Potential Problems. Based on experience in shifting from traditional teacher training approaches to competency-based approach in developing nations (especially in Africa), planners can anticipate some problems.

Resistance from Conventional Educators. Competency-based teacher training requires a shift in the basic philosophies, values, and beliefs regarding education. Because of this, some resistance will arise from educators, teacher trainers, and teachers. In Somalia, however, there is a genuinely felt need for a shift in the direction of competency-based teacher

training. Curriculum reforms in primary and secondary education appear to provide a start for such a shift.

Resource Allocation. Designing and implementing a competency-based teacher training curriculum requires heavy investments of time, money, and Effort. Unlike traditional teacher training where the scope and sequence of the curriculum can be specified through a logical "armchair" analysis, a competency-based curriculum requires systematic analyses of the critical features of different types of Somali classrooms, characteristics of different groups of students, and elements of the primary teacher's task. It is easy to resist such front-end investments because of the assumption that the basic principles of teaching are all known. A systematic analysis, however, forms the basis of the competency-based curriculum.

Lack of Generalizability. A major problem with the structured teacher model is that the teachers are able to effectively implement a specific instructional system, but unable to transfer their competencies to any other system. There must be an intelligent trade-off between rapid, relevant, and targeted teacher training and slower, but more generalizable, education based on principles of teaching.

Dependency on Instructional Materials. In theory, it is possible for a teacher in the first two models to function without instructional materials. If the teacher knows the subject matter and basic pedagogical principles thoroughly, he or she should be able to improvise the instructional session. In contrast, the structured teacher model is heavily dependent on instructional materials and other tools of the trade, that a teacher would be at a total loss without them.

Action Plan. This section presents a tentative action plan for implementing the two recommendations. Details of this plan would be modified during the actual implementation, based on the immediate needs and resources for teacher training.

1. Establishing Goals for Teacher Training. The first step in this priority area would be to specify the goals and policies of teacher

training. Somali education is undergoing a major shift from increased access to improved quality, from a subject-matter focus to a child-centered curriculum, and from abstract theory to practical reality. A clear statement of teacher training philosophies and policies would provide a suitable baseline for reforming the curriculum and developing training materials.

2. Analysis of School Curricula and Instructional Materials. In this step, the curricula and the instructional materials for the primary and secondary schools are systematically analyzed to identify the competencies required for implementing them. The primary school curriculum has changed dramatically along with the instructional materials. The secondary curriculum is scheduled for a similar reform in the near future. It is important that the teacher training curriculum be synchronized with these shifts.

3. School Management Analysis. Several changes have been suggested in the school management patterns in this report and elsewhere. It is clear from our that the classrooms in remote regions of Somalia are different from those in Mogdisho. Different patterns of school management depending on student enrollment, staffing, and geographic location are needed. The roles and functions of a teacher differs among these different schools. An analysis of the competency requirements in each type of school should form another basis for the competency-based teacher training curriculum, ensuring equal effectiveness of the teacher in whichever type of school he or she is assigned to.

4. Language of Instruction. English is likely to be the medium of instruction for teacher training since most of the textbooks and reference materials are in that language. The development of the new curriculum gives us an opportunity to systematically increase the use of Somali so that the language in which teachers are trained is the same as the language in which they will teach. A long-term policy regarding the language for teacher training should be made at this step so that the new curriculum can be created for optimal use. With the amount of language shifting taking place in teacher training classrooms, an important activity at this step would be to create a glossary of educational terms.

5. Teacher Competency Analysis. The next critical (and possibly the most time-consuming) activity is a task analysis of teacher performances through logical analysis and review of the demands of the new school curricula and textbooks (including programmed teaching materials described under the previous priority area). At the first level of analysis, such major performance areas as instruction, classroom management (discipline), implementation of the curriculum, evaluation, administrative activities, counseling and guidance, and local preparation of instructional materials should be identified. Each of these performance areas are subdivided into specific tasks. Instruction, for example, breaks down into the tasks of presenting information, asking questions, giving feedback, and facilitating transfer and application.

In addition to this core teacher training curriculum related to structured teaching, methods of teaching specific subject areas (such as mathematics, science, religious education) would also be analyzed. The emphasis during these analyses should be to identify practical, relevant, and empirically-established teacher competencies. The

outcome of this step will be a set of goals and specific behavioral objectives related to critical teacher functions in Somalia schools.

6. Establishing Evaluation Procedures. Even before developing instructional materials for teacher training, an evaluation system should be created. The current evaluation procedure for Somalia teachers emphasizes mastery of academic subjects and some professional competencies at a theoretical level. The new evaluation procedure would focus on practical skills through actual teaching in real or simulated situations. This evaluation procedure would also measure other practical skills (such as constructing a test, planning a lesson, and prescribing suitable remedial instruction for a student whose test score profile is given) through a variety of performance assessment techniques, including observation systems, checklists, and rating scales.

7. Competency-based Instructional Modules. The competency-based teacher training program would be based on a set of modularized instructional materials developed during this step. These modules would provide a model for the materials-based instructional approach recommended to the teachers. Such instructional materials will also permit effective continuity and standardization among preservice training, inservice training, and correspondence courses for teachers. For each teacher competency area, the instructional module would clearly specify behavioral objectives, present one or more criterion tests to operationalize these objectives, and supply instructional content and activities which are directly related to each objective. The modules would contain practical activities in real or simulated classroom situations with checklists and instructions for the trainer for providing constructive feedback.

8. Formative Evaluation and Revision. The competency-based teacher training package should be tried out with representative preservice and inservice trainees. It should then be revised on the basis of the feedback from trainees and trainers to improve its motivational and instructional effectiveness. When regionalization of the primary teacher training takes place during the next five year development plan, each regional training center might modify the modules to better suit local conditions.

Alternative Strategies. There are a number of alternative decision points in designing and implementing a competency-based teacher training curriculum. The choice of strategies available in these decision points is briefly discussed below.

Teaching of Specialists Versus Generalists. For maximum efficiency and flexibility, most teachers should be trained to be generalists, capable of handling different subject areas. However, some subjects may require specialized types of secondary schooling, as in the case of the subjects to be taught in Arabic. An important decision in designing the CBTT curriculum is the relative proportion of generalists and specialists to be trained.

Grade Level Specialization. With Secondary School Leaving Certificate being the common entry requirement for all future teacher trainees, determining who will teach at which level of schooling becomes a critical one. If training is to last for four years for both primary and secondary school teachers, then all teachers should receive the same basic training prior to specialized courses on primary and secondary curriculum.

Heterogeneous Trainees. The secondary teacher trainees at Lafoole the College of Education include new secondary school graduates and experienced primary school teachers who have passed their MOE examinations. This creates a heterogeneous group: some with more experience than schooling and the others with more schooling than experience. This requires different tracks for different groups of entering trainees.

Alternative Delivery Systems. Conventional courses at the College of Education are only one of many different delivery systems available for CBTT in Somalia. Other approaches to training are being tried out, including workshops and seminars of different durations at different locations. Correspondence courses (with initial intensive training) have been successfully used by the IITT for the training of primary teachers in refugee camps. Additional delivery systems for inservice teachers might use radio broadcasts and itinerant workshops conducted by the Central Inspectorate. These alternative delivery systems should be carefully reviewed, designed, tried out, and modified to identify the optimum combination for Somalia.

Relationship to the Five-Year Development Plan--New Curriculum Project. Under a project supported by UNICEF, the CDC is reforming the primary curriculum with new objectives, subject structure, learning/teaching strategies, and textbooks, beginning with grade 1. The proposed CBTT curriculum will ensure that primary school teachers are able to efficiently implement this new curriculum.

New Subject Areas. CDC is also preparing curricula and instructional materials in Health Education and Environment and Practical Studies. The CBTT

approach is most suited for inservice and preservice training of teachers in these new subject areas.

Teacher Training Project. CDCs Teacher Training Task Force has undertaken the preparation of new curricula and learning materials. The CBTT approach will efficiently fit into this activity.

Strengthening of the Relationship Between CDC and Teacher Training. Staff members at CDC are currently writing a Teacher Training Manual, holding seminars for the Halane lecturers, and conducting workshops for teachers. All of these activities can benefit from a CBTT approach.

Contribution to External Efficiency. The CBTT approach to teacher training is based on external task analyses of teacher performance. These analyses provide face validity to the curriculum from an external efficiency point of view. Actual verification of the contribution of teacher training to external efficiency requires longitudinal data collection.

Contribution to Internal Efficiency. Many of the contributions of the proposed CBTT approach to internal efficiency have been discussed in the preceding section concerning five-year development plan activities.

Flexible Assignment of Generalist Teachers. A major inefficiency in Somali schools is in the area of teacher assignments to classrooms. Because of the highly specialized nature of secondary schools teacher training, teachers are not fully utilized in the schools. Through the CBTT approach, teachers can be trained in generalizable competencies which, in conjunction with the new textbooks, will permit a more cost-effective use of teachers.

Efficient Implementation of the New Curriculum. The nature of the Somali curriculum is undergoing a significant change from a content-centered to a child-centered approach; from a theoretical to a practical stance; and from a teacher-centered to a text-centered presentation mode. These changes require retraining of inservice teachers. They also need a different approach to the training of the preservice teachers. The proposed CBTT curriculum will better fulfill these needs.

New Types of Trainees. Primary school leavers will no longer be trained to teach primary schools. The new secondary school leavers bring with them different set of entering competencies. A new curriculum has to be designed for them. The proposed CBTT approach will ensure that this new curriculum serves its function efficiently.

Monitoring of Teacher Behavior. A major reason that teacher evaluation is not carried out efficiently by inspectors is the lack of clear specifications of teaching competencies. A side effect of the new CBTT curriculum will be to provide a list of valid competencies which can form the base for a criterion-referenced evaluation system.

Contribution to Access and Equity. Students in remote rural regions suffer from educational handicaps, including the unavailability of competent teachers. Even trained teachers do not at present have the competencies to cope with the realities of the rural schools. Under the proposed CBTT curriculum, the environment of the village schools, the management and administrative patterns in such schools, and the special competencies required for teaching efficiently in them will form a critical component of teacher training. Thus rural school children will benefit from more competent teachers.

Cost Considerations--Developmental Costs. The development of the CBTT curriculum can be undertaken either as a local project under the Directorate of Teacher Training with some short-term technical assistance or as a major intensive project with long-term technical assistance. In the former case, the cost components will be similar to those for the second priority area; in the latter case, similar to the third priority area.

Recurrent Costs. The implementation of the CBTT curriculum will not involve additional recurrent costs since the instructional materials simplify the tasks of the primary and secondary teacher training faculty. Some additional initial costs may be required for setting up the new curriculum and

orienting the teacher trainers. However, these costs could be absorbed under the developmental costs.

4.3.5 FIFTH PRIORITY: Improve the Quality of Secondary School Materials: Recommendations 11-12

Recommendation 11: Design appropriate instructional systems for secondary schools in Somalia.

Recommendation 12: Develop and implement these instructional systems in secondary schools.

Description. The Somalia Ministry of Education is currently focusing its efforts on reforming the curriculum and improving the instructional materials for primary education. This specialization is justifiable since the lack of a strong foundation of primary education will nullify any attempt at improving the higher levels of education.

At some time in the near future, however, secondary education must also be reformed. CDC has almost completed the revision of the primary curriculum and has scheduled to begin revision of the general secondary curriculum. Textbooks for general secondary education currently exist, but they must be revised to fit the new curriculum. Alternatively, a new set of textbooks have to be developed from scratch to fit the new curriculum.

A major branch of secondary education is vocational/technical education. After completing primary schooling, the brighter students enroll in a four-year technical secondary school program to be trained as a technician or in a three-year program to be trained as a skilled worker. Initially, there were ambitious plans for diverting a large proportion of primary school leavers into secondary technical education, but due to a number of reasons (identified in the GTZ Report and the National Planning Report, under USAID sponsorship). This plan did not turn out to be a feasible one.

The two recommendations in this priority area deal with the improvement of secondary school instructional materials by the application of the principles of instructional systems design discussed earlier. The first recommendation calls for the design of appropriate instructional systems for

secondary education (including technical education). The second one calls for the development and implementation of these systems.

Action Plan.

1. Curriculum Reform. The first step in the proposed procedure is to review the secondary education curriculum and to revise it on the basis of advances in the subject areas; to make it more compatible with the new primary curriculum; and to suit the labor demands and societal needs in Somalia. The curriculum for general secondary education needs to be made more practical; that for technical education needs to include more academic subjects, so that the graduates have the required competencies in basic skills.

2. Educational Systems Analysis. During this step, the characteristics of secondary schools, of secondary school teachers, and of secondary school learners are systematically analyzed to improve the curriculum and to select appropriate instructional media and strategies. At the end of this step, a basic blueprint for all secondary school instructional materials would be developed.

3. Reform of Examinations. During this step, an evaluation system for the measurement of student achievement of the curricular objectives for secondary education is designed. The evaluation system should be capable of evaluating, classifying, and certifying secondary school leavers with the desired degree of objectivity, reliability, and validity. The outcome of this step is not a set of examinations, but a system for constructing, administering, and scoring such examinations.

4. Design of the Instructional System. At the beginning of this step, an overall specification for both general and technical education is prepared. Then, beginning with the first year of secondary education, sets of textbooks and other instructional materials are developed, by curriculum writers at CDC.

5. Formative Evaluation and Revision. Prototype instructional materials are produced by CDC and submitted to a series of formative evaluations. In the first phase, the materials are tried out with individual students to identify and to correct major problems. Later, they are tried out in a few selected tryout schools in the nearby regions. Finally, they are tried out in various schools which reflect different enrollment patterns, staffing patterns, and urban/rural locations. At the end of each phase of formative evaluation, the materials are revised to improve their classroom feasibility and their instructional and motivational effectiveness.

6. Production and Implementation. The new instructional system is gradually implemented on a nationwide basis. This implementation requires initial preparation of physical facilities and people. The latter involves providing preservice and inservice training to teachers (as indicated in the previous section) and orienting and training everyone involved in the implementation process.

Design of the Instructional Materials. Actual design of the secondary school instructional materials presents a number of options. A cost-effective

approach is to utilize the already available textbooks and to prepare adjunct programmed materials to update and upgrade them. The new combination should be made usable in a self-instructional or small-group format. Such self-contained materials can be used flexibly in a variety of ways (including correspondence courses). They could also ensure comparable educational quality in remote regions, and make it easy for a generalist teacher to handle a specialized subject.

Examination Systems. In Somalia, as in most other developing nations, the Secondary School Leaving Certificate Examination is a prime mover of the educational system. A critical step in reforming the secondary school curriculum is to reform the examination system at the end of the program. Many options are available in the way these examinations are constructed, administered, and scored--including whether a centralized Examination Board should coordinate it or whether it should be done on a regional, district, or local basis. If the examinations are to be centralized, we still have the choice of whether it should be a part of the Ministry of Education or coordinated by an external agency. Other variable factors in the examination system include the types of measurements, compatibility with the University Entrance Examinations, scheduling of the examinations, single versus multiple examinations, relative weight to local and national examinations, criteria for pass, and scoring methods. Tests and examinations have undergone some major changes in recent years. Hence, this is an area where technical assistance could be used profitably.

Contribution to External Efficiency. In Somalia, secondary education is the major supplier of trained people to the labor market. Improved efficiency in secondary education should result in increased supply of employable youth immediately, and improved productivity at the workplace gradually. Improved external efficiency is especially likely to occur in technical secondary education, especially if the curriculum and the instruction are congruent with labor market demands in Somalia and in neighboring countries.

Contribution to Internal Efficiency. The major contributions to internal efficiency in this area are similar to those of improving the quality of primary educational materials.

Contribution to Access and Equity. Contributions to access and equity are also similar to those of improving the quality of primary educational materials.

Cost Considerations

Developmental Costs. The development of secondary school instructional materials can be undertaken either as a local project at CDC as a part of the New Curriculum Project with some short-term technical assistance or as a major intensive project with long-term technical assistance. In the former case, the cost components will be similar to those for the second priority area in the latter case, similar to the third priority area.

Recurrent Costs. The implementation of the new secondary instructional materials will not involve additional recurrent costs since they are additional tools for the secondary school teachers. Some additional initial costs may be required for setting up the new system and orienting the teachers. However, these costs could be absorbed under the developmental costs.

4.4 SUMMARY

Instructional materials provide an efficient avenue for improving the quality of education in Somalia. They are not panaceas, however, for all educational problems. Used in conjunction with improved teacher training (Chapter 2) and improved management and administrative structures, they can contribute significantly to improving the educational quality of schools in Somalia.

This chapter has presented five sets of recommendations. The first two are of general applicability and deal with production/distribution and with instructional systems design. The remaining three specifically relate to

improving the quality of instructional materials for primary and secondary schools as well as teacher training.

Specific recommendations under these five priority areas are:

FIRST PRIORITY: Improve the Production and Distribution of Instructional Materials: Recommendations 1-3

Recommendation 1: Provide alternative sources for timely printing and production of instructional materials.

Recommendation 2: Develop and implement a system for the nationwide distribution of instructional materials for primary and secondary grades.

Recommendation 3: Develop and implement a system for the storage, distribution, and retrieval of instructional materials in schools.

SECOND PRIORITY: Strengthen Instructional Systems Design Capabilities: Recommendations 4-5

Recommendation 4: Develop suitable models for instructional systems design in Somalia.

Recommendation 5: Provide inservice and preservice training in instructional systems design.

Recommendation 6: Strengthen the role of CDC as an instructional systems design unit.

THIRD PRIORITY: Improve the Quality of Primary School Materials: Recommendations 7-8

Recommendation 7: Design a programmed teaching (PT) system for the primary schools of Somalia.

Recommendation 8: Develop and implement a PT system for primary schools in Somalia.

FOURTH PRIORITY: Improve the Quality of Teacher Training Materials: Recommendations 9-10

Recommendation 9: Develop a practical, relevant, and competency-based curriculum for teacher training.

Recommendation 10: Design a competency-based teacher training system for primary and secondary school teachers in Somalia.

FIFTH PRIORITY: Improve the Quality of Secondary School Materials: Recommendations 11-12

Recommendation 11: Design appropriate instructional systems for secondary schools in Somalia.

Recommendation 12: Develop and implement instructional systems for secondary schools in Somalia.

Somalia MOE has initiated exemplary activities in the development of instructional materials and curriculum. Projects at the CDC provide the necessary impetus for the continuing work in instructional system design. The recommendations in this chapter are designed to build upon this momentum and to suggest guidelines and strategies for further progress.

5.0 SUMMARY AND CONCLUSIONS

5.1 INTRODUCTION

This chapter presents a summary of recommendations proposed to enhance school quality in the Somalia national education system. Fifteen recommendations are proposed within the three areas of this study: School Organization and Management, Teacher Training, and Instructional Materials. Based upon the conclusions reached in the preceding chapters, five levels of priority are developed for implementation.

The recommendations, which will be further discussed below, are:

School Organization and Management

1. Incentives for increased teacher productively should be created. This includes monetary and nonmonetary incentives, as both the professional status and public recognition of the value of teaching need to be enhanced. Current salaries for primary school teachers are not adequate to attract qualified teachers and should be increased.

2. School organization and structures should be revised to increase within-school efficiency. Headmasters should be trained to assume a leadership role, and practices governing allocation of teachers within schools should be improved. Multigrade classrooms would improve the access to primary and secondary education throughout the country, and increasing the school year and day would benefit students and teachers. Strong community support for schools could be developed though Community Advisory Committees.

3. Evaluation and support services to schools should be strengthened. As the delivery agencies closest to schools, Regional and District Offices should be strengthened and provided with necessary resources for decentralization of decisionmaking. The Central Inspectorate should be redefined as a regional support office and provide training and other services as requested by Regional Education Offices. The Planning Department should be strengthened to serve as the heart of the MOE information management system.

Teacher Training

1. The preservice training for primary teachers should be raised to the same level as the program for general secondary teachers. This would require not only providing a college level training program with competency-based curriculum and supervised practice teaching, but also training of faculty to implement the new program.

2. A competency-based inservice program should be designed and implemented for the untrained or inadequately trained primary teachers now in system. This program should provide opportunity for these teachers both to upgrade academic skills and acquire new professional skills to enable them to carry out their duties. At the

same time, a parallel inservice program should be created to support those new primary teachers who, being secondary school leavers, do not suffer the academic handicap of the former group.

3. Secondary teacher training should be improved by revising the current program to emphasize training for professional educators, including supervised practice teaching. Future secondary teachers should receive training in both the classroom situations and instructional materials they will encounter in their profession. Instructional materials in the Somali language, describing practical approaches for teaching in the national education system, should be developed.

4. A competency-based inservice program should be designed and implemented to support the further professional development of general secondary teachers.

5. A comprehensive policy for the use of English in both primary and secondary teacher training programs should be developed. Teacher training programs using English language texts suffer when students are not prepared to read the high level material. Adequate preparation for this task should begin with programs at primary and secondary levels, focusing on developing reading skills in English. The English program at Lafoole College of Education should also focus on developing reading skills.

6. After an adequate primary teacher training curriculum is developed, a regional college should be established at Hargeysa. This would allow access to training for those unable to relocate to Moqdisho and would also lower costs by eliminating boarding costs.

7. Only adequately trained teachers should be assigned to teach in primary and secondary schools. The use of National Service participants as teaching staff does not contribute to the creation of a professional teaching corps.

Instructional Materials

1. Efficient systems for the production and distribution of instructional materials should be established. Instructional materials can improve the efficiency of the educational system only if they reach the classroom in a reliable and timely way.

2. Instructional Systems Design (ISD) capability should be strengthened. This requires preservice and inservice training in ISD and the creation of an ISD unit within the Center for Curriculum Development.

3. The quality of the primary instructional materials should be improved. A programmed teaching system offers advantages of sequenced content for children and explicit instructions for the teacher.

4. The materials for teacher training should be improved by creating a competency-based teacher training curriculum. This curriculum would prepare teachers for the tasks required of them in the national education system.

5. The existing instructional materials for general secondary schools are inadequate. They should be supplemented by adjunct programmed

materials to update and upgrade them until a major revision can be undertaken.

These recommendations are provisional and may be modified as the initial implementation occurs, based on the priority levels discussed in 5.5 below.

5.2 RECOMMENDATIONS FOR SCHOOL ORGANIZATION AND MANAGEMENT

Recommendation 1: Increase Teacher Salaries

Salaries act as the primary sign of the value government places on the activities of a subsector. Teacher salaries currently represent less than a living wage, and are significantly below private sector salaries for each level of educational attainment. Government incurs tremendous opportunity cost since it must train replacements for those leaving teaching for employment with greater monetary rewards. From an educational perspective, the constant influx of inexperienced teachers into the system detracts from the stability and improvement of the educational enterprise. It is recommended that primary and secondary teacher salaries be raised to the real cost of living.

Recommendation 2: Provide Incentives for Teaching in Remote Areas

It is recommended that teachers in remote areas receive a substantial allowance over and above salary, and be given preference in future assignments and priority for further training. These incentives would reinforce government's commitment to an equitable distribution of teacher experience across schools.

Recommendation 3: Revise Teacher Tenure and Promotion Procedures

Additional incentives for teachers can be provided in rules and regulations governing tenure and promotion. At present, the civil service rules governing teachers neither recognize teaching as a profession nor provide rewards for teacher productivity. A longer probationary period, yearly formal evaluations, and college level training for primary teachers are needed.

Recommendation 4: Increase the Nonmonetary Rewards to Teachers

The contributions of teachers should be recognized at the district, regional, and national levels. This recognition should be based upon real achievement, should involve the community as well as the school, and be well publicized in the media.

Recommendation 5: Strengthen the Instructional Leadership in the Schools

Headmasters are robbed of much of their authority by low salaries, the short probationary period for civil servants, and promotion on the basis of seniority alone. Lack of training prevents them from fulfilling their role as instructional leader of the school. Training should be provided to enable headmasters to effectively carry out this central role.

Recommendation 6: Change Practices Governing the Allocation of Teachers Within Schools

At present, teachers are assigned to schools by determining the number of classes. This is determined by a process of dividing the the number of students by the optimal class size (40). This number is multiplied by the 36 required periods a week, but since teachers are not responsible for 36 periods a week, the number of teachers exceeds the number of classes. It is recommended that, as salaries are increased, teachers be assigned a full teaching load of 36 periods a week. Teacher training institutions should prepare teachers to teach a wide variety of subjects in order to teach a full load of courses.

Recommendation 7: Expand the Number of Multigrade Classrooms, Particularly in Remote Areas

Multigrade organizational techniques should be used more widely in remote districts to increase immediately the number of grades offered in incomplete schools. Programmed teaching materials would facilitate this school organization plan, and teachers should be trained for this type of teaching at preservice and inservice levels.

Recommendation 8: Increase the Effective Length of the School Year and the School Day

At the present time, the school calendar and curriculum are based on a 38-week school year and 240 minutes of instructional time per day (six periods of 40 minutes). The new primary curriculum is based on the addition of a seventh period each day and a one-week increase in the school year. It is reported, however, that schools are actually in session only 21 to 26 weeks in a year. There seems to be, in fact, much variation in the school year and day among the regions. The school calendar should be adapted to the employment cycles in the regions, based upon information to be collected from each regional community.

Recommendation 9: Establish Community Advisory Boards

In many areas community leaders are not informed of either the successes or the problems facing local schools. This is true both in large urban areas and in rural districts where the headmaster and teachers are new to the community. Strong community ties can be accomplished through the formation of Community Advisory Committees, either elected or appointed.

Recommendation 10: Strengthen the Regional and District Education Offices

The Regional Education Offices (REOs) serve as mechanisms for implementing central decisionmaking regarding schooling. Together with the District Education Offices (DEOs), they are the organizations closest in the support chain to the schools. The quantity and quality of resources at the disposal of REOs and DEOs should be increased in order to allow these organizations to reach their full potential.

Recommendation 11: Redefine the Role of the Central Inspectorate

The role of the inspector is to provide ongoing inservice to both headmasters and teachers in the areas of administration, goals and objectives of the curriculum, classroom organizational techniques, and teaching methodologies. In addition, inspectors should collect reliable data on the

characteristics of the schools. At the present time, the inspectorate is undertrained, and requires extensive training and redefinition of its duties in order to become effective. The Central Inspectorate should be redefined as a regional support office, responsible for:

- coordinating and implementing short-term training exercises as requested by the REOs;
- collecting and tabulating data for the regions for submission to the Planning Division and the Administrative Division; and
- processing special requests from the regions for additional teachers, textbooks, and materials.

Recommendation 12: Strengthen the Planning Division

The present staff of the Planning Division is not adequate for the scope of work implied in the required information management tasks. At a minimum, the size of the department should be doubled. The skills of the present staff should be upgraded, staff added, and access to MOE microcomputers facilitated.

5.3 RECOMMENDATIONS FOR TEACHER TRAINING

Recommendation 1: Provide a Four-year Primary Teacher Training Program of Supervised Practice Teaching

Primary teacher training should be raised to a level equal to that of general secondary teacher training. Until this equalization of training is established, primary teaching will not be seen as a profession, and it will be difficult to improve school quality. MOE has established the policy of admitting only secondary school leavers for primary teacher training, an important step towards establishing an effective primary teacher training program. A four-year program, including one year of supervised practice teaching, should be created with a degree equal to that now received by those completing the secondary teacher training program.

Recommendation 2: Design and Implement a Competency-based Primary Teacher Training College Program for Implementation of the New Curriculum

Previous primary teacher training programs have focused on remediating academic skills of the primary school leaver trainees. Methodology courses were theoretical in nature and not related to the Somali situation. A competency-based teacher training course should be designed and implemented, based upon an analysis of tasks required of primary teachers throughout the range of Somalia schools.

Recommendation 3: Train Primary Teacher Training College Staff to Implement a Competency-based Primary Teacher Training Program

The staff of the recommended primary teacher training college, wherever it might be located, should be trained to implement the competency-based program.

Recommendation 4: Design and Implement a Competency-based Upgrading Program for Undertrained Primary Teachers Now in System

Many primary teachers now in the national education system entered during special historical circumstances, during the rapid dissemination of educational opportunity throughout the country, and have received little or no formal training. Other primary teachers were trained at a later program at Halane, which emphasized academic skills and offered little preparation for actual classroom situations. These teachers require a special upgrading program in both academic skills and professional management and methodology. This inservice program should be based on an analysis of competencies required for effective teaching in Somalia primary schools. A locally-relevant distance education teacher training program, such as the IITT program using audio-cassette tapes and seminar materials for small group study, is recommended.

Recommendation 5: Design and Implement a Competency-based Inservice Program for Future Secondary-graduate Primary Teachers

All future primary teachers will be secondary school leavers, and will be trained in the revised curriculum of the recommended primary teacher training

college program, wherever it is located. Their inservice needs will be different from the remedial academic and professional needs of the inadequately trained primary teachers now in system. The inservice program for the future adequately-trained primary teachers should be based upon a task analysis of primary classroom teaching in order to identify the competencies needed.

Recommendation 6: Provide a Four-year Secondary Teacher Training Program With One Year of Supervised Practice Teaching

The secondary teacher training program should be four years in length and should include a one-year supervised practice teaching in order to prepare teachers for actual classroom responsibilities.

Recommendation 7: Design and Implement a Secondary Teacher Training Program with Emphasis on Training for Professional Educations

The secondary teaching training program should be revised to emphasize the professional educators, not content area specialists. The difference between a science or math specialist and a science or math teacher should be clearly reflected in the courses offered for training general secondary teachers. The present theoretical courses should be replaced by a practical training program reflecting Somali school and community situations.

Recommendation 8: Train Secondary Teachers at Lafoole College of Education in the Use of Existing Somali Secondary Texts and Instructional Guides

Training for general secondary teachers should include the existing Somali language secondary texts until these can be revised. Teachers should also be trained in the use of the recommended adjunct instructional guides (Chapter 4.0) which will permit them to more effectively use the existing texts.

Recommendation 9: Strengthen the Somali Language Program and Text Production Unit at Lafoole College of Education

The texts now used for training secondary teachers at Lafoole are outdated, written in English (a language imperfectly understood by most students), mostly U.S. and therefore irrelevant to the Somalia educational system. There is a great need to develop Somali language texts, comprehensible to all students and relevant to general secondary teacher training. The resources of the existing Somali Language Program should be used for this purpose, as well as the existing Text Production Unit, which needs additional human and material resources for this task.

Recommendation 10: Develop a Competency-based Inservice Program for General Secondary Teachers

A competency-based inservice program should be developed for present and future general secondary teachers to support them in carrying out their teaching responsibilities. This program should be based upon a task analysis of general secondary teachers in urban and remote area schools.

Recommendation 11: Strengthen English Instruction at the Primary and Secondary Levels with Emphasis on Reading Skills

The use of English at postsecondary training levels has increased in Somalia and indications are that this trend will increase in coming years. To better prepare students for this situation, two recommendations are made:

1. begin English training earlier, so that students can be reasonably expected to attain higher levels of proficiency by the time of post-secondary training, and

2. focus English programs on reading skills, not all four language skills of speaking, listening, reading, and writing. Such a focus will permit higher levels of reading proficiency to be attained without the additional costs of materials and training for all four language skills.

Recommendation 12: Design and Implement Instruction for English Reading Skills at Lafoole College of Education

English reading skills instruction should be added to the general secondary teacher training program at Lafoole in order to prepare teachers to implement the recommended English program.

5.4 RECOMMENDATIONS FOR INSTRUCTIONAL MATERIALS

Recommendation 1: Provide Alternative Sources for Timely Printing and Production of Instructional Materials

The State Printing Agency currently has a very heavy printing load, and alternative sources for timely printing and production of instructional materials should be investigated. These might include private sector presses or supplementing the CDC printing capacity.

Recommendation 2: Develop and Implement a System for the Nationwide Distribution of Instructional Materials for Primary and Secondary Grades

The present system for distributing instructional materials is not adequate for the needs of the national system. The organizing, packing, storing, and distribution of materials to all schools, even those in remote regions, should be a priority in order to provide schools with existing materials. A systems analysis should be carried out to determine what is needed and private sector involvement investigated.

Recommendation 3: Develop and Implement a System for the Storage, Distribution, and Retrieval of Instructional Materials in Schools

A system should be developed and implemented for ensuring the distribution of textbooks to students and other instructional materials to the teachers in the classroom.

Recommendation 4: Develop Suitable Models for Instructional Systems Design in Somalia

Somalia institutions engaged in the development of instructional materials could be improved by systematic application of the principles and procedures of instructional systems design. Suitable models for instructional systems design in developing nations are available and could serve as bases for developing a version for the special needs of Somalia.

Recommendation 5: Provide Preservice and Inservice Training in Instructional Systems Design

Competencies required for instructional systems design should be taught through preservice training to education majors at Lafoole College of Education and to curriculum writers at CDC and other institutions through inservice workshops.

Recommendation 6: Strengthen CDCs Role as an Instructional Systems Design Unit

The CDC is currently engaged in development of revised curricular materials and has developed much expertise in this field. It should be strengthened as an instructional systems design unit and serve as a centralized clearinghouse in this area.

Recommendation 7: Design a Programmed Teaching (PT) System for the Primary Schools of Somalia

The recently revised curricular materials for primary grades should be incorporated into a PT framework, and the design process of further instructional materials should follow this framework. PT can provide efficient education in Somalia primary schools through more efficient teacher training and more reliable instructional quality.

Recommendation 8: Develop and Implement a PT System for Primary Schools in Somalia

A PT system is recommended for primary schools in Somalia, adapted to the needs of different types of schools, such as urban schools, multigrade schools, schools for nomadic populations, and incomplete cycle schools. An appropriate, flexible configuration should be devised which would be responsive to local needs, resources, and other constraints. It should incorporate the new curriculum methods and materials in the most cost-effective fashion.

Recommendation 9: Develop a Practical, Relevant, and Competency-based Curriculum Training

A competency-based teacher training curriculum which identifies the critical performances of a teacher related to student learning and other

outcomes in the classroom should be developed. Competency-based instructional modules should be developed for the curriculum which would serve as a model for the materials-based instructional approach recommended to the teachers.

Recommendation 10: Design a Competency-based Teacher Training System for Primary and Secondary School Teachers in Somalia

Improved teacher training materials for a competency-based system are needed for both primary and secondary school teachers. At present, only a small component of the teacher training curriculum is devoted to professional teacher preparation. Even this component deals with theoretical aspects of teaching, often based on outmoded concepts and irrelevant textbooks from developed nations. The creation of these new materials should be based upon a task analysis of teacher performances. Identification of these performance areas should lead to specification of tasks to establish practical, relevant, and empirically-established teacher competencies.

Recommendation 11: Design Appropriate Instructional Systems for Secondary Schools in Somalia

The secondary education curriculum should be reformed to make it more compatible with the new primary education curriculum and to suit labor and societal demands in Somalia. As recommended for primary education, this should be based upon an analysis of the characteristics of secondary schools, teachers, and learners. Following this systematic analysis, a basic blueprint for all secondary instructional materials could be developed. This reform should also include an evaluation system for the measurement of student achievement of the secondary curricular objectives.

Recommendation 12: Design and Implement These Instructional Systems in Secondary Schools

A cost-effective approach would be to utilize the existing secondary textbooks by preparing adjunct programmed materials (instructional guides) to update and upgrade them. This would permit these texts to be used in a self-instructional or small-group format. The programmed materials would ensure

comparable educational quality in remote regions and allow a generalist teacher to handle a specialized subject. A critical step in reforming the secondary school curriculum will be to reform the examination system at the end of the program. The Secondary School Leaving Certificate Examination is a prime mover of the educational system and inevitability affects the entire system. Many options exist for the reform of this examination system.

5.5 PRIORITY ACTION STAGES

It is not feasible for the MOE to simultaneously undertake the implementation of all the recommendations of this study of improving school quality in the primary and secondary systems. Some of the recommendations presented in the three main chapters of the study, and summarized above, involve relatively simple changes or innovations and require little or no expenditure of funds. Other recommendations, however, will necessarily require much planning, coordination of complex activities, and a significant level of expenditure.

Many of the recommendations contained in this study require investment and recurrent costs beyond the current capability of the Government. The description and rationale developed in the study should be used as the basis for developing specific proposals for donors supportive of improving school quality.

Many of the recommendations included here, however, do not require substantial additional investments or recurrent cost obligation and should be considered for immediate implementation in order to improve the quality of education. In particular, these recommendations include the development of nonmonetary incentives for teacher productivity, the strengthening instructional systems design to use new curricular materials without lengthy teacher training programs, and the redefinition of school supervision (regional offices, district office, and the inspectorate). These recommendations, along with the discussions contained in each chapter of alternative strategies, can result in immediate improvement of school quality

while long-range plans for system quality are being developed and the necessary financial resources identified.

In order to emphasize the interrelated priority levels of the recommendations presented within each chapter of this study, a compilation of Priority Action Stages is presented below. The ordering of these stages reflects the arguments developed within the body of the report. It does not indicate the relative feasibility and ease of implementation of the recommendations. Thus a recommendation which may be "costless" and immediately feasible to implement may not be included in Priority Action Stage One.

PRIORITY ACTION STAGE ONE

I. Increase the Incentives for Teacher Productivity.

   1. Increase Teachers Salaries.

   2. Provide Incentives for Remote Area Teaching.

   3. Revise Teacher Tenure and Promotion Procedures.

   4. Increase the Nonmonetary Rewards to Teachers.

II. Strengthen the Planning and Statistics Department Within the Division of Planning.

III. Improve the Quality of Primary Inservice Programs.

   1. Design and Implement a Competency-based Upgrading Program for Existing Undertrained Primary Teachers.

   2. Design and Implement a Competency-based Inservice Program for Future Postsecondary Primary Teachers.

IV. Assign Only Trained Teachers to Primary and Secondary Schools.

V. Improve the Production and Distribution of Instructional Materials.

   1. Provide alternative sources for timely printing and production of instructional materials.

   2. Develop and implement a system for the nationwide distribution of instructional materials for primary and secondary grades.

   3. Develop and implement a system for the storage, distribution, and retrieval of instructional materials in schools.

PRIORITY ACTION STAGE TWO

I. Revise School Organization Structures.

1. Strengthen the educational leadership in the school.

2. Change practices governing the allocation of teachers within schools.

3. Expand the number of multigrade classrooms, particularly in remote areas.

II. Improve the Quality of Primary and Secondary Teacher Training Programs.

1. Provide four-year programs with one year of supervised practice teaching.

2. Develop competency-based curricula based upon actual teaching tasks in Somalia.

III. Strengthen instructional systems design capabilities.

PRIORITY ACTION STAGE THREE

I. Strengthen the regional and district education offices.

II. Develop a comprehensive policy for the use of English in primary and secondary teacher training programs.

III. Improve the quality of primary school materials.

PRIORITY ACTION STAGE FOUR

I. Redefine the role of the Central Inspectorate.

II. Decentralize primary teacher training.

III. Improve the quality of teacher training materials.

PRIORITY ACTION STAGE FIVE

I. Increase the effective length of the school year and the school day.

II. Establish Community Advisory Committees.

III. Improve the Quality of Secondary School Materials.

APPENDIX I

COST OF LIVING ESTIMATES FOR A FAMILY OF FOUR

APPENDIX I

Cost of Living Estimates for a Family of Four

	Moqdishu	Rural Area
Rent	3,500	600
Food	2,400	3,500
Utilities	250	300
Transport	900	900
Medical Care	300	300
Miscellaneous (including recreation, educational expenses, emergencies)	1,500	1,500
Total So. Sh.	8,850	7,100

Sources: The World Bank, "An Institutional Development Program for the Somalia Institute of Development Administration and Management", July 1985; Ministry of National Planning.

APPENDIX II

EDUCATIONAL STATISTICS

EDUCATIONAL STATISTICS

ALI HASSAN GA'AL

Accurate educational statistics are absolutely essential if the educational system of Somalia is to operate efficiently. We need to know statistical data about the schools and students in past years. How many were enrolled annually since 1969? Has there been an improvement in the national examination scores? How many teachers, classes, and schools were there at the time of our independence? These questions can only be answered if there were accurate statistics tabulated each year.

In addition, we need to have statistical data for the present current year. How many students are now enrolled? How many had to repeat a grade? How many are promoted and how many were school leavers? Finally, we need accurate statistics in order to plan for the future.

The Ministry of Education collects educational statistics. These are processed, tabulated, and published, in the form of a year book, for the distribution to these who are concerned with the development of education in Somalia.

The educational statistical year book provides a complete coverage of all educational institutions. In so far as the public educational system is concerned, the year book provides data, not only of schools for which the Ministry of Education is responsible, but also for institutions conducted by other Ministries. There follows a brief digest of some of the significant statistics related to educational development in the last year and over the last 13 years.

It has been observed that the number of primary schools increased (1970/71-1980/81) to 1,120 while this trend started to decline from the academic year 1981/82 when 67 primary schools were closed. The number of pupils enrolled in primary schools has increased during the same period (see attached appendix). But from the school year 1981/82 there was a decline due

to the high dropout rate that occurred in most of the agricultural regions such as Lower Shabelli, Middle Shabelli, Godo, Bay, Hiran, etc.

During the past decade, and most particularly over the last five or six years, it has been observed that there was a very remarkable increase in secondary level, particularly in the general schools, (1970/71) 6,748, while in 1983/84 their enrollment reached 53,591.

EDUCATIONAL PLANNING

Any educational program has to be organized and formulated into systematic strategies. These strategies must then specify the structure of the implementation process through a specified period. The organization of activities, which must be carried out by a specific time, is defined as educational planning.

Since the 1969 revolution, however, here in Somalia, the Ministry of Education was highly concerned to lay out the overall national plan for our educational system, and to design in structural ways the setting of its goals and objectives to integrate the socio-economic development of the state. Though this took quite a long time in defining, reviewing, implementing, and evaluating, finally the following objectives have been agreed upon to be the guidelines for our educational system.

Educational Objectives of the Five-Year Plan (1982 - 1986)

The following objectives are identified as the key to our educational development:

1. continuous democratization and expansion of educational opportunities, through compulsory universal free primary education (I-VIII);
2. improvement in the content of the educational program;
3. increasing the effectiveness of the educational process;
4. diversify the post primary education in order to provide the country with an enlarged number of trained students in the various level of the manpower requirement;

5. expanding functionalizing adult education and strengthening the follow-up program for adult population;

6. strengthening and disseminating the Arabic language.

Strategies of Educational Plan Policies

Regarding the above mentioned objectives as the baseline, the Ministry of Education had defined a specific set of strategies which characterize the future guidelines of educational development and are summarized below:

1. to increase the enrollment level of primary school six-year-old students (80,000) to 52%;

2. to increase the enrollment of secondary schools, particularly technical/vocational schools;

3. to improve and strengthen primary and secondary teacher training programs (as a step towards decentralization five primary teacher training centers will be established in the regions);

4. to develop and improve nonformal education through the establishment of seven regional adult education centers;

5. to establish family life extension centers in rural areas of all districts as a means of improving the status of women and to set up family life teacher training centers in all regions; and

6. to strengthen Arabic language teaching in all educational institutions and teacher training programs and to popularize the use of Arabic in the public service and among the adult population.

IMPLEMENTATION PROCESS

To translate these strategies into action, the Ministry of Education envisaged the following projects as the basis of educational development.

1. Decentralization and Expansion of Primary Education

Emphasis was placed on the compulsory universal free primary education that was supposed to continue with the target to reach the intake of 52%, (equivalent to 88,000) of the entry age of six in the year of 1986 (formerly it was 34.4%).

Without any pretention it is a fact that such an objective has never been materialized due to the following factors.

A. the high dropout rates that has been mainly experienced in the agricultural and in the boundary zones where disputes and military engagement are highly persistent, and

B. lack of resources and financial inputs that were required according to the planned policy.

II. Diversification of Post-Primary School Education

As the post-primary education provides the nucleus for a potentially trainable middle, high level, skilled, and semi-skilled professional workers, it was the government's policy for the development of the post-primary education to be organized as follows:

- 24% of the primary output has to enter the secondary general education,
- 14% of secondary technical education, and
- 42% vocational schools with allowance of 20 percent drop-outs.

However, during the implementation process, such intentions have never been achieved and contrarily a reverse action has been experienced. At the moment, statistics show the following outlet for our primary leavers:

- 70% general secondary schools,
- 10% technical schools, and
- 15% vocational schools.

These discrepancies between the outcome and the intended plan can be explained as a result of the following factors:

A. The unit cost for establishing such vocational/technical schools is so high that it cannot be covered with the current financial and material resources of the Ministry of Education.

B. All planned financial input for the implementation of this plan had never been allocated by the Ministry of Finance.

III. Improvement in the Content of Educational Programme

The improvements in the content and in the effectiveness of the educational process are seen to have a significant influence in the following areas:

A. reviewing and remodeling the existing educational materials, and

B. the effectiveness of teacher training programs.

Consequently, as designed in the National plan, a curriculum development center has been assigned to involve all cognitive and motor activities related to the content improvements. As a result, several sound programs have been utilized (e.g., new editions of primary school teachers have been developed and new approaches for curriculum enrichment has be have been implemented).

As far as the teacher training programs are concerned, the project plan has targeted the following objectives:

- strengthening the quality of the training programs,
- extensions of training duration from one year programs to 2 or 3 year training programs, and
- decentralization of training institutes over five regions.

Even though the Ministry of Education with its limited resources has endeavored to materialize and to put into action some of these intentions, such as improvement of the content of teachers' training programs and extensions made to the duration of training programs, less has been accomplished concerning the decentralization policy and inservice training programme.

This came into existence due to the unavailability of financial resources in the central government budget and the inability to attract donor international agencies.

BASIC EDUCATIONAL STATISTICS

LEVEL OF EDUCATION	1970/71	1975/76	1980/81	1983/84
Primary				
1. Schools	287	844	1407	1388
2. Classes	1177	5148	7480	6715
3. Enrollment	50324	219517	271704	220680
4. Teachers	1654	4281	8122 (a)	9460 (a)
Secondary				
1. Schools	26	39	78	108
2. Classes	203	227	883	1336
3. Enrollment	7088	7046	45491	64291
4. Teachers	349	572	2018 (*)	3035 (*)

(a) Includes a national service.

(*) Includes part-time teachers, national service, and expatriate teachers.

APPENDIX III

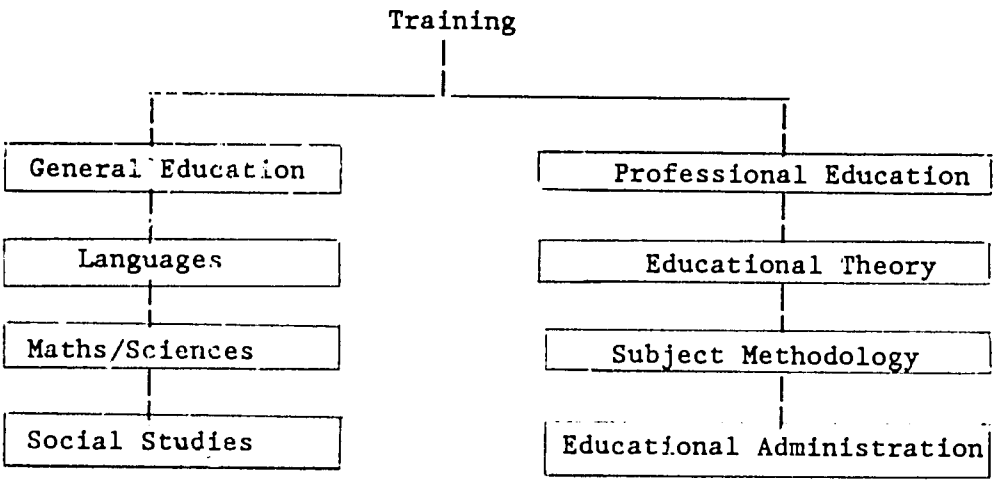
HALANE ADVANCED PRIMARY TEACHER TRAINING PROGRAMME

HALANE ADVANCED PRIMARY TEACHER TRAINING PROGRAMME

1. The overall objective of the new teacher training programme is to train teachers who will make a marked impact on the quality of instruction, and hence the quality of education, in the nation's primary schools. By recruiting secondary school leavers, the general education needs of the participants are at an acceptable level, leaving sufficient time for educational studies and methodological practice.
2. These are constraints which have to be taken into consideration if one is to plan realistically and if one is to hope for reasonable success. The major difficulty is that though a new programme is being proposed, it will be carried out at Halane, which is associated with a form of organizational discipline regarded as not very conducive for teachers. A teacher training institute is more than the total of instructional hours. It should embody a sound educational philosophy and should be a center of enquiry and those of intellectual activities which will produce a teacher with the necessary skills to become a respected leader in his/her community.
3. One of the major weaknesses observable in teacher performance today is the absence of methodological skills. This is the result of two main causes: a) with primary-leaver intake, the training period was devoted to general education, b) the severe lack of lecturers trained in primary level methodology. Thus the new course allows greater time for professional training. Though the absence of specifically trained education lecturers, at present, limits the implementation of an ideal curriculum.
4. The latter problem can be dealt with to a degree by holding training workshops and preparing specific educational materials. The teacher training task force has prepared a teacher manual, which, though not complete in every curricular area, is a substantial body of instructional material, based on the existing Somali situation. It will be necessary for the ministry to provide the opportunity of the task force so that the essential training of the lecturers can take place.

5. The most important ingredient in any educational activity is the amount of motivation that can be generated, among both lectures and students. It is hoped that students can be motivated by providing a course of general education which will approximate first year university level. This will enhance their chances for university places at a later date. It is a more difficult task to motivate lecturers, especially as the seemingly only acceptable form is that of additional payment. This may not be possible for all lecturers of the new courses but consideration should be given to those who will have extra planning and material preparation to do.
6. It is within the above context that the proposed curriculum is presented. The strictly educational arguments will be given with each module as presented.

General Curriculum Division



Periods per week: 30 (50 X 1 hour class x 6 days)

Division of hours

		Gen.Ed.	Prof.Ed.
Term I	A (first 8 weeks)	23	7
(4 month)	B (Second 8 weeks)	20	10
Term II			
4 Months		20	10
Overall weighting approx.		60%	40%

Allocation of Periods.

1) General Education:

	TERM I		TERM II		Course Totals	
	A 8 wks	B 8 wks	Human-ities	Sciences	H	Sc
Somali	3	2	2	1	72	56
English	3	3	2	2	80	80
Arabic Relig.	3	3	2	1	80	64
Maths	4	4	-	3	64	112
Science	6	4	-	3	80	128
Social studies	4	4	4	-	112	64
Totals	23/30	20/30	10/30	10/30	504	504

Note: 1. In Term 2 the students will divide into Humanities and Science groups. This is to be able to study topics at a higher level in areas of student preference.

2. Efforts will be made to introduce integrated Science, hopefully showing students the value of this approach against the traditional Biology, and Chemistry.

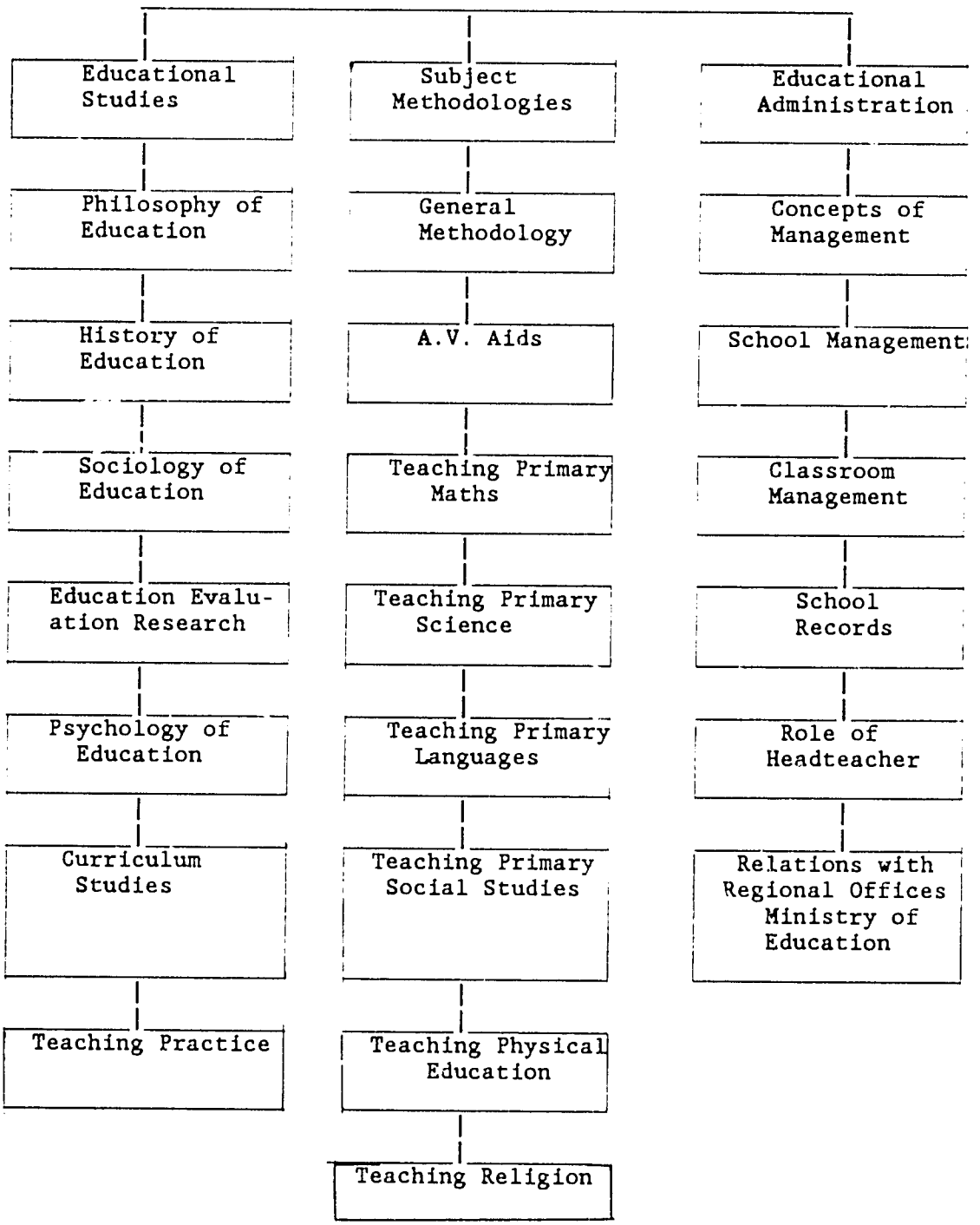
3. The medium of instruction will be English, apart from Somali and Arabic.

Professional Education.

(note: The stated objective is to prepare general primary teachers, so that they can teach a broad spectrum of subjects. There is however, a practice in many schools of subject-specialization, based on teacher preference. Further, students with the expectation of going on to LaFoole after three years service, may feel that they should teach in a specialized subject).

A. Educational Topics.

Professional Training



B. Allocation of Periods.

1. Term I

Topics	Term A	1 hour B	Term Totals
Ed. Philosophy and History	1	1	16
Ed. Sociology, Evaluation, Research	2	2	32
Ed. Psychology	2	3	40
Ed. Curriculum Studies	2	2	32
Teaching Practice Preparation	-	2	16
Totals	7/30	10/30	136

2. Term 2

Topics		hours Term 2	
General Methodology		1	16
Ed. Administration		4	64
A.V. Aids		3	48
Methods:	Maths	2	32
	Science	2	32
	Social Studies	2	32
	Somali/English	2	32
	Arabic/Religion	2	32
	Physical Educ.	1	16
	Health Ed. Envir.	1	16
	Totals	20/30	320

3. Overall Hourly Distribution

1. Total hours = 30hr p.w. x 32 weeks = 960 hours.
A. General Education - 504 hrs. = 53.3%
B. Professional Training = 456 hrs = 46.6%

960 100%

Teacher Needs

Notes

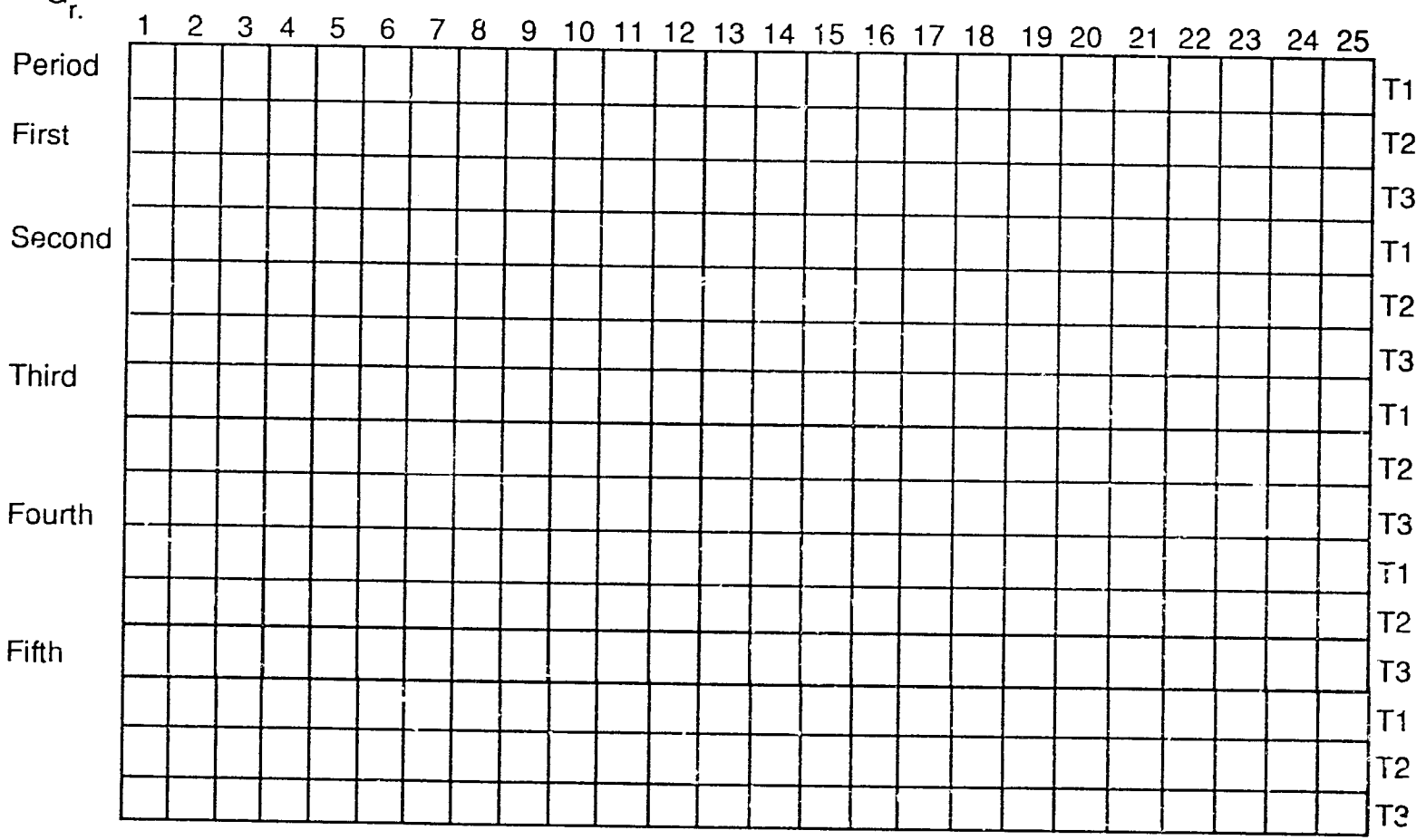
1. Calculations based on 15 hours-lecture week.

2. Eventual number of teachers will depend on "doubling up" abilities.

Term 1	Term 2	
5	2.4	Somali L.
5	3.3	English
5	2.4	Arabic/Rel
6.3	3.4	Maths
8.3	3.4	Science
6.3	3.6	Soc. Studies
1.6	-	Ed.Phil.+Hist.
3.3	-	Soc.Ev.Res.
3.5	-	Psychology
3.3	-	Curr. St.
3.3 *	-	Teaching Prac.
-	1.6	Gen. Meth.
-	6.6	Ed. Admin.
-	5	A.V. Aids
-	3.6	Meth.Maths
-	3.6	" Science
-	3.6 ≠	" Soc. St.
-	2/2 ≠	" Som/Arab
-	2/2	" Eng/Reli
-	1.6	" P.Ed.
-	1.6	" H.Ed.:En. Educat.

* = Teaching practice only for 2nd half Term 1
≠ = Alternate course: Those taking Arabic/Religion do not take Eng/Som.

DAY: _____


Gr.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Period
First
Second
Third
Fourth
Fifth
T1
T2
T3
T1
T2
T3
T1
T2
T3
T1
T2
T3
T1
T2
T3

SUMMARY ANALYSIS OF THE PRESENT SITUATION OF TEACHER TRAINING HALANE

A) Halane Environment:

Halane, being the only primary teachers training center, does not have an educational environment fit to train teachers.

B) Objectives

The main objectives of training teachers in Halane were: "To prepare disciplined, creative, socially and professionally well trained teachers." Today it is doubted whether, apart from discipline, these objectives are being reached.

C) Selection of Students:

The criteria to select teachers set by the Ministry of Education (which are physical fitness, academic standard, regional teacher demands, etc.) are not practically followed by selecting committees, especially with regard to academic standards and regional quotas.

D) Student Background:

Most of Halane intake are from lower socio-economic families or academically poor students whose results never satisfy national demands later.

E) Medium of Instruction:

Halane students use three different languages (Somali, Arabic, and English) in their courses. Apart from the Somali language, these are new to them -- e.g., Geog., Hist., and Arabic/Religion are all taken in Arabic, while English is taken as a language. It is obvious that students encounter many difficulties studying in these various languages. The language issue needs to be redefined.

F. Evaluation;

The ministry doesn't make the necessary follow-up to check if Halane leavers put into practice the academic and professional skills that were taught.

Further, it seems that the yearly output of Halane and the national teacher demand don't balance. Though Halane is financed by the Ministry of Education and Ministry of Defense, it is not known how much is spent on each student at Halane (unit cost).

ANALYSIS OF PRESENT CURRICULUM AT HALANE

Objectives:

The Halane Curriculum was intended for primary teachers to achieve the following:

a) To prepare academically and professionally trained teachers.

b) That academic and professional training should be based to the national demand.

c) Halane's curriculum should be related to the primary education.

d) Halane teachers should be academically trained to participate in further education at Lafoole.

A) Problems that exist in the curriculum:

1) Curriculum geared to secondary Education only.

2) Very little professional training.

3) Tutors not experienced or trained to give professional training.

4) Materials often too difficult for students.

5) No relation between what is learned and the primary school education (curriculum).

B) Problems that face students:

1) No other available supplementary materials translated into their national vernacular language, that can help specifically to their general level of education.

2) Students have not the ability to read the foreign books well.

3) On some occasion, a few students in the Somali medium of instruction group are transferred to the Arabic medium of instruction group, without considering their educational base.

C) Negligent points by the curriculum developers:

1) Halane's curriculum developers do not provide Halane teachers with opportunities to participate in decision-making processes of curriculum planning. This means that they prefer to have decisions made for them, rather than participate in making them.

2) They have also lacked a teacher's handbook that should include, among other things, teaching strategies and other suggestions aimed at helping teachers handle curricular materials.

3) No inservice training to familiarize them with the new materials, since there is no tutor guide for each of core curricular subjects.

4) There is no positive correlation between Halane's teachers and the curriculum developers for discussing if problems were recommended or feedback of the implementing materials.

5) They ignored that a teacher has a major role to play in educational development, whether he approaches his work actively or passively, because new innovation remains unfulfilled without the active cooperation of the classroom teacher.

APPENDIX IV

REVIEW OF THE PAST INSERVICE TRAINING

REVIEW OF THE PAST INSERVICE TRAINING

Introduction

It is rather customary for the Ministry to hold annually various refresher courses, seminars and workshops for primary and secondary teachers, headmasters, inspectors, and Regional Education Officers throughout the country. Such seminars are not only held in Mogadishu but in all the other regions of the Republic except those for Regional Officers of Education (Regional Education Officers, Central Inspectors, and Regional Inspectors). Financially, such courses are mainly sponsored by UNESCO and UNICEF organizations.

A. The Objectives

The main objectives of these courses are:

1. to equip primary and secondary school teachers with better academic knowledge in the different school subjects, (e.g., science, social studies, Arabic/Religion, etc.);
2. to help teachers attain better professional training in the following areas:
   a. 50 % of time allocated to subject methodology,
   b. 40% of time allocated to class-management, and
   c. 10% of time allocated to foundations of education.

The primary school teachers usually participate in three compulsory summer seminars after two years of preservice training in Halane. As a result of these seminars they attain a form four secondary level education. Afterwards, they can take the teachers' evaluation examination. Previously, short workshops were also held for the science and English secondary school teachers.

Annual seminars are held for both Regional Education Officers and Central Inspectors in which they exchange ideas concerning general education problems. School headmasters are also given such yearly courses to understand better school administration, filing maintenance, etc.

Duration - the duration of such short courses is usually 4-8 weeks: a six-day week/four-hour workday.

REASONS TO CONTINUE THE PROGRAMME

- need of trained teachers, H/Masters and inspectors,
- to remedy educational school problems, and
- to make primary and secondary school teachers professionally interested in the field of education by advancing their education level.

PROGRAMME FAILURES

- the participants educational background,
- selection criteria of participants,
- lack of experienced teaching staff,
- centers without material (Curriculum, Instructional materials etc.), and
- lack of incentives for both trainers and trainees.

Progress

1. Teacher Training Manual: First draft in English

   Translated to Somali

   Tested at Halane and at Polytechnic T.T.

   All units revised and printed

   Writing of additional materials

   Workshop on materials held with IITT and Halane lecturers.

2. Preservice Training: Following policy to upgrade teacher training entry level to post-secondary:

   1984: Seven month experimental course at Polytechnic. 40% of curriculum devoted to methodology.

   1985: New course at Polytechnic: Task Force responsible for its planning, Materials preparation, Orientation of teachers, and Evaluation.

   Goals of 1984 course: increase in education studies; problems of graduates "upped" to secondary teaching.

3. Preservice situation today: No clear indication of future policy

   A. Halane being phased out; this year's group last to graduate. Future of center unclear.

B. 1984 - planned to take 1,000 secondary leavers into 85 Polytech. courses - only 100 recruited; problem of status of primary teacher.

C. new graduates of Polytech. courses go to secondary school teaching.

Inservice

1. Workshops: The Task Force is responsible for CDC's workshop programme.

   January 1984: Diversification Workshop

   November 1984: Headteachers Workshop

   November 1984: Inspectors Workshop

   May 1985: Health Ed. Workshops (2)

   February 1985: Secondary School Headteachers Workshop

2. Problems: As yet plans for systematic inservice training. Lack of skilled personnel in Teacher Training Department of MOE.

Developmental Work

1. Analyses: Four situation papers written:

   Situation analysis of Halane College

   Analysis of Halane curriculum

   Review of Inservice Training

   Review of Teacher Evaluation Examination

2. Programs: Worked out a proposal for a teacher training workshop to support an Action Aid programme - awaiting decision. Formulated educational policy and plan for a SOS Primary school. In progress.

Testing Of New Materials

Organizing pupils to participate in the materials testing activities at CDC.

Problems

1. Difficulty in organizing workshops. A strategy has been worked out (visits, timetabling, materials, preparation and evaluation) but many REOs not keen on having workshops during term time and teachers are not available during holidays.

2. Training needs of Task Force:

193

A. consultancy services required to help develop long-term goals and objectives and to plan materials.

B. short and long-term training of Task Force personnel: study tours and diploma courses are required.

3. Publication of prepared materials: same difficulties as the CDC departments.

194

APPENDIX V

DRAFT PROPOSAL - PROJECT NO. 2: TEACHER TRAINING SERVICE UNIT

Jamhuuriyadda Dimoqraadiga Soomaaliya
Wasaaradda Waxbarashada iyo Barbaarinta
XARUNTA HORUMARINTA MANAAHIJTA

جمهورية الصومال الديمقراطية
وزارة التربية والتعليم
مركز تطوير المناهج

Draft Proposal

Ministry of Education

Department of Teacher Training

Project No. 2 :

Teacher Training Service Unit

1984-1987

PROJECT PROPOSAL NO.2

TEACHER TRAINING SERVICE UNIT

A. Background

1. Teacher training is regarded as the key factor in the Ministry's efforts to improve the quality of education in general and to relate education to the pupils environment in particular. In the past decade great quantitative gains have been made in an effort to respond to the situation arising from the declaration of universal primary education. However, quantitative gains have been made at the expense of qualitative output which has resulted in a noticeable drop in the quality of instruction in the classroom.

2. To meet the demand for teachers following UPE the Ministry centralized teacher training as an expedient in order to utilize the resources available to their maximum. This served its purpose in the short term but has failed as a long term strategy as there now appears very noticeable regional imbalances, particularly in rural areas and those farthest from the capital, Mogadisho, where the present teacher training college is located.

3. The Ministry has taken a number of decisions which, when implemented, will make a profound change in the structure and content of teacher education in the country:

   a. Decentralization: It is proposed to set up 5 regional colleges with a strong community studies component in their curriculum,

   b. Upgrading of Entry Qualification: It is planned to set secondary level education as the entry requirement for teacher training in situations. This will, at a stroke, make obsolete 95% of the present preservice curriculum which is a shortened version of secondary school academic subjects.

   c. Extending: The period of study from the present two to three years, thus further improving the all around training of the teacher and allowing much more time that at present for practice teaching, community studies, practical subjects etc.

   d. Establishing: A systematic inservice teacher training programme which will give every teacher the opportunity to advance while remaining within his/her profession.

B. UNICEF Assistance

1. During the 1982-84 programme of cooperation UNICEF has provided assistance for Halane T.T.C. in (a) Seminars for education tutors (b) an Educational library (c) an A/V unit and AV staff training workshop (d) the preparation of methodology textbook for pre- and inservice professional studies courses. These inputs, at present well underway, are expected to make a definite qualitative impact on teacher training.

2. UNICEF has assisted the initiation of moves towards decentralization. The North-West Integrated Social Development Programme focuses on improving the content and quality of teaching in the schools of the

197

region. Teacher upgrading courses are an integral part of this programme. Decentralized Teacher training plan as a noted project.

3. UNICEF has also assisted inservice training programs of the Ministry of Education. The focus for these inservice courses has been on upgrading the level of general education. With the proposed increase of preservice training the focus in the future will be on upgrading professional competence.

C. Project Focus

The project will focus in the first instance on drawing up a detailed coordinated structure for all pre- and inservice teacher training in Somalia.

The project will initially take the shape of a special Task Force and will, on completion of the preliminary work, become a permanent unit within the Ministry. The task force will come under the Director of Teacher Training and Curriculum. The overall objectives of the task force will be to:

1. Coordinate all inputs into pre- and inservice teacher training activities.

2. Prepare the curricula for all teacher training courses (general education and professional studies courses).

3. Monitor and evaluate the implementation of teacher training courses.

4. Determine and maintain the academic standards of teacher training programs.

5. Plan and implement inservice teacher training courses.

6. Work in close liaison with the Planning and Curriculum Development sections of the Ministry to ensure i) adequate quantitative supply of teachers ii) coordination with curricular innovations in the primary schools.

D. Specific Objectives

The project seeks to achieve the following by Dec. 1987.

1. To develop the curricula for preservice training courses. These curricula will be based on an evaluation of: a) the quality of the entrants to the teacher training institutes, b) projected qualitative outcomes of the trainees, c) the specific environmental factors obtaining in the case of the proposed regional institutions.

2. To prepare the materials for the above curricula. These will consist of:

   a. Trainee textbooks for each of the core curricular subjects

   b. Tutor guides for the above

c. To test the materials and prepare the definitive editions.

d. To conduct seminars/workshops for the staff of the teacher training institutes to familiarize them with the new materials and methodologies.

e. To draw up a systematic inservice teacher training programme focusing primarily on the improvement of professional skills.

f. To conduct evaluation and research on teacher activities, with particular attention to such topics as rates of attrition, job opportunity and professional incentives.

g. To examine the implications of the present Teacher Evaluation regard to professional advancement, with special reference to qualifications for Headmaster and inspector levels.

E. Description of Activities

The following activities are expected to be carried out:

1. an evaluation of the present curriculum for preservice teachers.

2. a survey of inservice teacher training needs.

3. the writing of a detailed curriculum for teacher training at pre- and inservice levels.

4. the preparation of the necessary materials for the above curricula. This will involve both the writing of original materials and of adaptation of existing courses from countries of similar backgrounds. All materials will be written in Somali.

5. the conducting of seminars/workshops for the education tutors of the teacher training institutions.

6. the preparation of equipment and library lists for the teacher training institutions

7. the monitoring and evaluation of the prepared materials.

F. Linkage with Other Projects

The task force will liaise closely with:

1. the Directorate of planning of the Ministry of Education, especially with regard to teacher projections.

2. the statistical unit of the Directorate of Planning to determine continuity patterns.

3. the Curriculum Development Center to ensure that teacher training becomes the instrument for effective implementation of curricular reform.

4. the Women's Education service of the Ministry of Education to focus attention on promoting women's participation in teacher education both as far as (a) numerical representation and (b) family life orientation in curriculum planning.

The task force will, in a consultative and advisory capacity, hold discussions with potential donor contributors to teacher training activities.

G. Community Participation

The rationale for decentralized teacher training is based on the realization that teacher training must relate to the community the teacher will serve. Thus community studies will feature prominently in the curricula of the decentralized colleges. This will involve, for example, the incorporation of community committees in the planning of college activities, the use of the community as a source of resource people, the use of skilled local personnel in such areas as folklore, weaving, pottery, etc.

H. Management and Supervision

The task force will be directly responsible to the Director of Teacher Training and Curriculum. The Ministry is seeking bilateral expert assistance for the task force and this person would be responsible for planning, guiding, and supervising the activities of the group.

I. Monitoring and Evaluation

As teacher training is in a state of potential rapid transformation, monitoring and evaluation become vital components of the project. The task force will work closely with the statistical unit of the Ministry to ensure that correct base-line data is available. Formative evaluation strategies will be used and half-yearly **** summative evaluations will allow for any modifications to be made to the plan of action.

The task force will present six-monthly reports to the Ministry of Education and these will be discussed at directorate level.

J. Project Support Communication

The Educational Broadcasting unit of the National Broadcasting service will be utilized to make the communities concerned aware of the issues involved.

Use will be made of the Teachers Newsletter prepared by the CDC to keep the teaching profession informed about seminars, courses etc.

The task force will produce a booklet for educational planners, inspectors, and teachers as well as for personnel in other related Ministries to keep them informed of developments in the field of teacher training.

I. Commitments

National Contributions

1. salaries for the task force.
2. office space and basic office supplies.
3. printing facilities at the national state printing Agency
4. back-up support of directorates of the Ministry of Education.

Other External Agencies Contributions

1. The Africa Development Bank has made decentralization of teacher training its first priority for educational support to Somalia.
2. The World Bank (IDA) has proposed the building of classroom units specifically for inservice teacher training.
3. Assistance is being sought from DANIDA to provide advisory personnel to the project.

Unicef Contributions

UNICEF will provide cash, supplies, equipment and transport in an amount not exceeding_____: and subject to the availability of funds, _____from special contributions to cover.

Table A Proposed UNICEF Expenditure

General Resources

Staff Development: Honoraria

Head of task force 2,000 sh p.m x 12 m.

4 members of team 1,500 sh. p.m. x 12 m.

Equipment

1 Land Rover

2 Typewriters

Office materials

1 photocopier

Supplies

Printing costs:

8 subjects x 10,000 copies at 40sh/copy

Typist (2) 2 x 1500 x 12

1 Designer 1 1500 x 12

1 lay-out 1 x 1500 x 12

1 driver 1 x 1,000 x 12

July 85 - Dec 87

- Honoraria, fuel for Seminars, office supplies, Per diems for workshops, Educational tours,

Grand total July 1984 - December 1987

APPENDIX VI

TEACHER TRAINING PROPOSALS

TEACHER TRAINING REFORM: Proposals for Appropriate Strategies 1980-90

A. Introduction

1. In 1985 teacher training reached the end of the first phase of post-revolutionary development: the quantitative increase in the number of teachers. The increase - over 500% in the past decade - was achieved through the recruitment of post-primary students and by a "crash" approach to training.

2. Because of the expansion of education (Universal Primary Education was declared in 1976) the general standard of education declined in quality. This is the expected result when resources are strained, but one of the major contributory factors has been the underqualified status of the teachers. This has been most noticeable in the area of methodological competencies.

3. The major objective of the Ministry of Education in the next National Development Plan will concern the quality of education beginning, within the formal sector, at primary level. An integrated approach is being adopted, involving strategies concerning Teacher Training, Curriculum Development, and the Inspectorate.

4. Two major changes have been made with regard to teacher training. The first raises the entry qualification for teacher training to that of secondary school certificate level. This will enable the Ministry to devote the greatest portion of the training to professional studies. The second concerns the decentralization of teaching training institutions. The highly centralized Institute at Halane admirably served its purpose in the first, expansive phase of teacher training. However, resulting regional imbalances in teacher supply now demand that a decentralized policy be adapted.

5. To further strengthen the reform, the Ministry is embarking on a series of workshops and seminars for teachers and Headmasters of the primary sector. These workshops will also be decentralized, thus ensuring that improvement in teacher training will be nationwide.

B. Constraints

1. Two major constraints face planners when envisaging qualitative improvement in education. The first concerns the preparation of materials, innovative practices, etc., that will replace materials being used at present. The second concerns the training of those entrusted with the task of implementing the new materials and methodologies. If attention is not paid to both these areas, then any changes in the organizational and/or structural set-up of teacher training will, sooner or later, fail.

2. The task then is to develop a team of professional educators. Normally, one would expect the Education faculty of the National University to supply the nation with a core of such personnel. However, the Education faculty is still at its first phase of development - supplying adequate numbers of subject teachers for the nation's secondary schools - and is not in a position, yet, to offer the training necessary to provide professional educators. Fellowship programs are in progress and will eventually provide the solution to this problem, but this is a long-term strategy.

C. Solutions

1. Materials and methodologies which can make an immediate impact on classroom teaching must be provided. These can only be prepared by Somali nationals who are fully acquainted with the situation at classroom level. However, few of those who have expert knowledge of the existing situation have the skills necessary to develop the necessary training materials, to be used in the new pre- and inservice teacher training programs. To solve this problem the Ministry has sought the assistance of UNESCO, and a workshop was planned for November/December 1985 which will develop a training manual.

2. Production of a training manual which concerns the following topics:

   a. How to organize a course of study

   b. How to plan inservice training

   c. Training techniques

   d. Teacher evaluation

   e. Developing self-instructional materials.

D. Staffing

1. An educational consultant would be in charge of the overall running of the seminar. He/she should possess practical experience on an international level in teacher training in developing countries.

2. A minimum of seven local facilitators, drawn from nationals known to have wide experience and knowledge of educational practices and problems in Somalia. The facilitators would assist the consultant in all stages of the workshop, to ensure that relevance to Somali educational conditions be kept in focus throughout the assignment.

E. Methodologies

1. Examination of educational materials

2. Discussion of relevance of materials to existing situation

3. Organization of preservice and inservice course materials

4. Preparation of training manuals.

F. Resource Materials

1. Materials in use at preservice and inservice training courses

2. Materials produced by Teacher Training Curriculum Dept., CDC

3. Materials in use by Faculty of Education, National University

4. Materials requested from UNESCO and other international educational agencies.

The Seminar will address itself to the preparation of materials for professional studies courses for courses and pre and inservice primary teaching programmes.

G. The second task is to train those who will use the materials in the various training courses. Not only will the initial team of trainers need to be trained but, again, training materials will be needed to ensure a continuing supply of "trained trainers." This latter point needs to be stressed in view of the high mcbility of educational personnel in Somalia.

Proposal for a Training Workshop

Structure of Workshop

Participants:

A.	Central inspectors	- 16
B.	Teacher Trainers	- 30
C.	Regional Educational Representatives (Regional Inspectors, District Education Officers) 3 per region: 18 x 3	- 50
	Total	- 100

Duration: One Month

Implementation Schedules

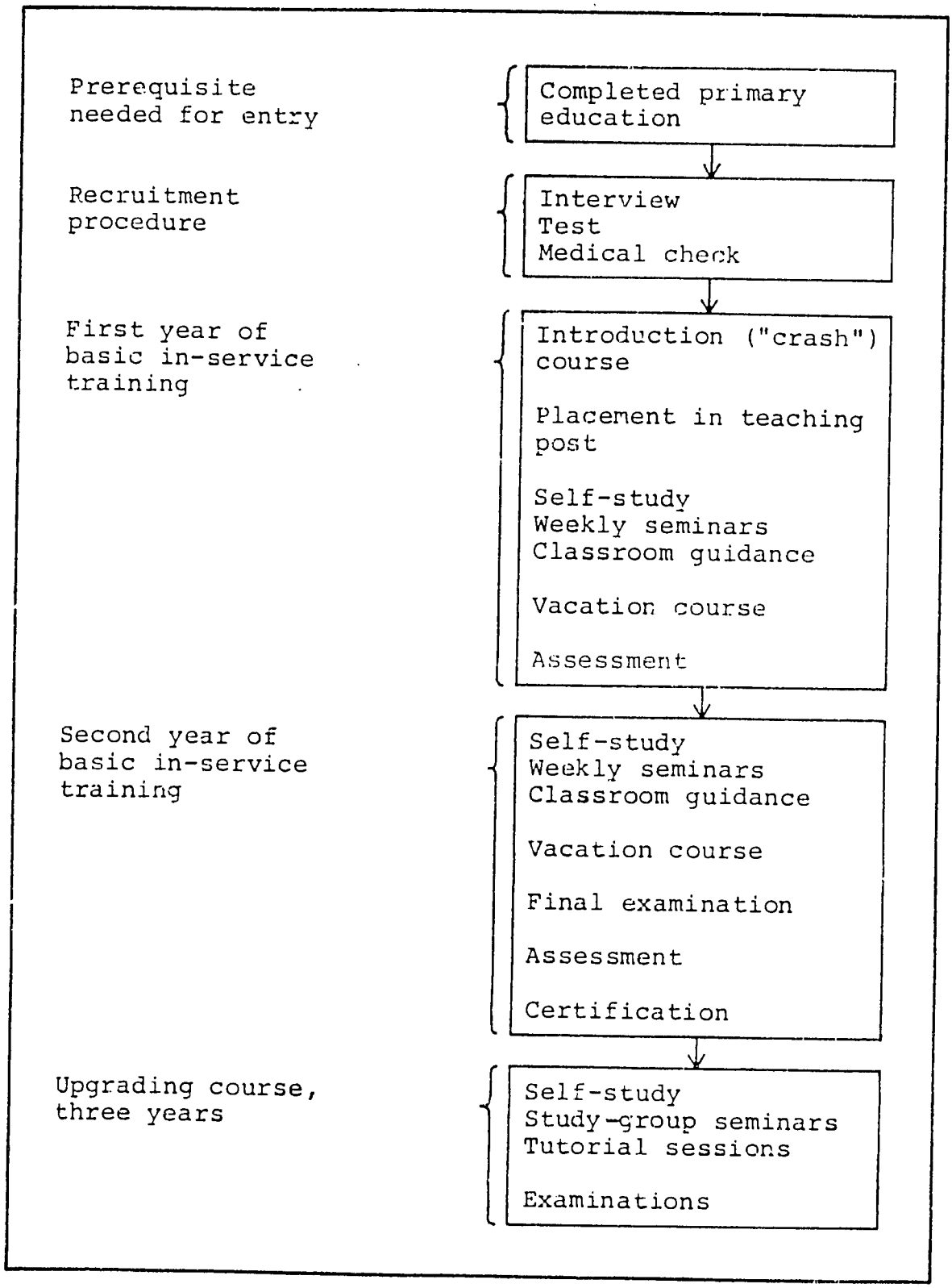
A.	Workshop:	Early 1986
	Preparation of Trial Materials	March - April '86
	Testing of Materials:	May - July 1986
	Preparation of Final Documents	August - Sept. '86

Budget

A.	Consultant:	- donor
B.	Facilitators: Honorarium 10,000 sh. x7	- 70,000
C.	Participants: Stipends 300 sh per day x 28 days x 1,000	- 840,000
D.	Travel (Average for participants from regions) 1,000 per x 100	- 100,000
E.	Stationary	- 50,000
F.	Printing and Trial materials	- 150,000
		1,210,000
G.	Contingencies (15%)	- 181,650
		1,391,650
	Approximately U.S. dollars (exd. consultant)	17,500

APPENDIX VII

IITT PRIMARY TEACHER TRAINING



Organization

Topics of Second Year's Assignments
(Translated from Somali)

No.	Subject	Topic
T1	Science	Soil and Light
T2	Geography	Weather, Climate and Climatical Regions
T3	Education	Educational Psychology I
T4	Somali	Composition and Comprehension
T5	Science	The Circulatory, Respiratory and Digestive Systems
T6	Physical Education	Movement Skills
T7	Arabic	Grammar and Comprehension
T8	Maths	Numbers, Ratios and Proportions, Areas and Volumes
T9	Religion	Quran, Hadith and Akaayid
T10	Science	Matter
T11	Geography	The Earth's Crust, the Solar System, Population and Food Production
T12	Maths	Distance, Time and Speed, Simple Interest and Geometry
T13	History	Islamic Religion and Revolutions
T14	Education	Educational Sociology
T15	Civics	Learning Civics
T16	Arabic	Grammar and Composition
T17	Maths	Sets, Graphs, Algebraic Expressions, and Equations
T18	History	Slave Trade, World Wars, Somali History
T19	Education	Educational Psychology II
T20	Science	The Skeleton, the Excretory System, and the Nervous System
T21	Somali	Somali Literature
T22	Education	Foundations of Education
T23	Physical Education	Basic Skills of Volleyball and Football
T24	Education	School Administration
T25	Maths	Exponents, Binomials, and the Circle
T26	Arabic	Literature and Comprehension
T27	Religion	Ibadat, Tahdiib and Siira
T28	Science	Mechanical Energy, Heat and Sound
T29	Somali	Somali Poetry
T30	Maths	Series and Binomials

APPENDIX VIII

APPROPRIATE EDUCATIONAL TECHNOLOGY FOR DEVELOPING NATIONS: LCL SYSTEMS

APPROPRIATE EDUCATIONAL TECHNOLOGY

FOR DEVELOPING NATIONS:

LCL SYSTEMS

TABLE OF CONTENTS

APPROPRIATE EDUCATIONAL TECHNOLOGY FOR DEVELOPING NATIONS: LCL SYSTEMS

A decade of work in developing educational systems for developing nations has resulted in the concept of Low Cost Learning (LCL) systems.

This appropriate-technology approach is a flexible process for developing an educational system which matches the local needs, works within local constraints, and utilizes local resources.

LCL systems maximize the benefits and minimize the costs of education.

A VARIETY OF METHODS AND MEDIA

EFFICIENT USE OF ALL HUMAN RESOURCES. LCL systems utilize parents, community members, and students to take care of a significant part of instruction and classroom management. They do this by identifying educational functions and allocating each function to the person who can provide the most benefit at the least cost. For example, they separate the design of instruction from its implementation. Subject-matter

specialists and educational experts design effective instruction. Nonspecialist teachers, paraprofessionals, and students implement it.

OPTIMUM USE OF INSTRUCTIONAL MATERIALS. LCL systems incorporate local textbooks. If textbooks are not available, they design and develop effective educational materials locally.

EFFICIENT USE OF ALL AVAILABLE SPACE. In addition to classrooms, students use kiosks, carrels, palaver huts, and banyan trees to learn individually and in small groups. To support the isolated learners in remote villages, LCL systems set up learning posts in convenient communities. If students cannot come to the school, education goes home to them through radio, television, and programmed learning modules.

EFFICIENT USE OF ALL AVAILABLE TIME. LCL systems handle crowded classrooms through flexible scheduling and functional grouping. They handle crowded schools through double shifts and year-round schooling.

SYSTEMATIC RESOURCE MANAGEMENT. LCL systems attend to management system as carefully as they do to the instructional system. Standard procedures for educational management at the national, regional, school, and classroom levels are carefully worked out and functionally integrated.

EFFICIENT FEEDBACK SYSTEMS. One way to improve the educational system is to install a relevant, timely feedback system at all levels. At the lower level, individual students receive immediate feedback about the adequacy of their responses. At the higher level, national decision makers receive reliable feedback about the effects of educational changes on economic progress.

EFFICIENT INCENTIVE SYSTEMS. In the classroom, an academic tournament motivates students to learn more efficiently. In the school a token reinforcement system rewards on-task behaviors and reduces discipline problems. In the school district, merit pay and academic awards recognize and reinforce exemplary teachers.

EFFICIENT TRAINING. LCL systems train teachers, administrators, and students to more effectively implement the LCL system. We provide orientation to parents and community leaders so that they can make informed choices among educational alternatives. LCL systems avoid unnecessary training. Although the system is based on sound theory and empirical data, trainers do not bore and burden everyone with every detail. Their approach to training is lean, practical, and pragmatic.

EFFICIENT PERFORMANCE AIDS. Checklists, recipes, worksheets, manuals, and tables elicit high-quality performance from

low-qualification personnel. By using a worksheet, a teacher derives means and standard deviations of test scores without having to understand the technical details. And by using a simple decision table, this teacher chooses remedial, mainstream, or accelerated learning for the students to suit the means and standard deviations of their scores.

FLEXIBLE APPROACH TO DESIGN

LCL CAN WORK AT ANY LEVEL. We can design a comprehensive educational system for the entire nation, or a 30-minute module for a classroom using the LCL approach.

LCL CAN WORK IN ANY SECTOR. We can design materials and methods for primary or secondary schools, formal or informal institutions, academic or vocational content, and liberal or professional education at the university level.

PROGRAMMED TEACHING AND PROGRAMMED LEARNING: TWO EFFICIENT EXAMPLES

Many LCL projects use programmed instruction--which is instruction that is prescribed or structured by the instructional materials.

Programmed teaching (PT) materials structure the teacher's behavior. Programmed learning (PL) materials structure the learners' behavior.

PROGRAMMED TEACHING IN CLASSROOMS

In a typical PT lesson, what and how the children are taught are controlled by the PT module. The teacher presents the content directly from the module -- pictures, letters, words, numbers, or arithmetic problems -- to the students. Or the teacher copies the content from the module to the blackboard.

The teacher follows the simple, straight-forward, standardized directions from the module to elicit and evaluate, to control and correct student responses. For example, after an error in adding three and four, the teacher draws the appropriate number of lines on the blackboard and has the children count the set of three, the set of four, and the total set of seven. After an error in reading, the teacher asks the children to read the missed sentence word by word and to sound out the missed word letter by letter. In other situations, the teacher corrects errors by modeling the correct response.

Through the use of appropriate grouping, pacing, and signaling strategies a single programmed teacher handles 60 students in the Improved Efficiency of Learning (IEL) Project in Liberia. With the additional strategy of using older students as programmed teachers, a single teacher handles 150 students in Project IMPACT in the Philippines.

Because PT modules are prepared by experts they incorporate the most appropriate and accurate content and the most effective and efficient methodology. The classroom teacher need not be experienced or expert to produce reliable results. In Liberia, undertrained and untrained programmed teachers are producing excellent results in the first three grades. In the Philippines, fourth grade students are teaching second grade children using PT materials.

PROGRAMMED LEARNING IN TEAMS

A typical PL lesson in our LCL system is different from the conventional programmed instruction of yesteryear. A learning team of three to five students (with rotating leadership) work through the PL module. Simple, straight-forward, standardized directions in the module tell the students to read alone the students read silently and indicate they have finished the task by laying down their modules.

The next direction may be to make up questions. Beginning with the learner to the leader's right, each makes up a question on the content just read and asks another to answer it. The next instruction may be to take turns answering. Each learner reads a question from the module and gives the answer. The leader checks to see if any other team member has a different answer. If so, learners discuss the differences. If not, the leader checks with the correct-answer feedback in the back of the module.

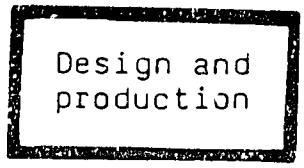
Learners use these procedures to complete the module. They report to the teacher for the criterion test. Using a scoring key, the teacher scores the test booklets and selects the module for the group to study next.

As in the case of PT modules, PL modules incorporate the best available content and methodology. As a manager of learning, the teacher can handle a large number of students at different grade levels. In Liberia, a single teacher can handle 60 students in PL classrooms; in the Philippines a single teacher can handle 200 PL students.

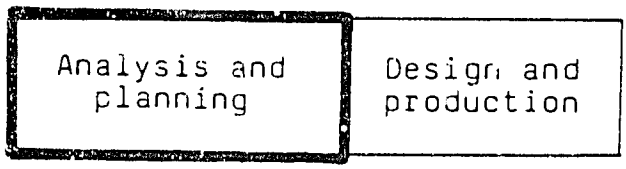
By combining PT and PL, a single teacher can handle all the primary grades in low-enrollment rural schools.

LCL USES A SYSTEMATIC DEVELOPMENTAL PROCESS

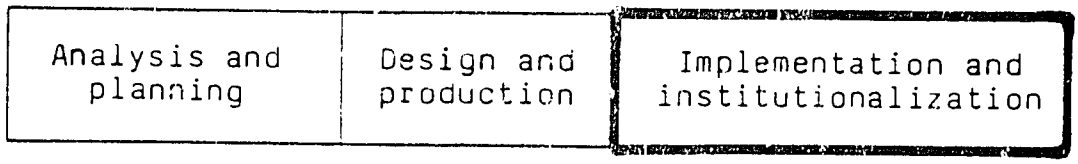
The heart of this process is the design and production of instructional systems.



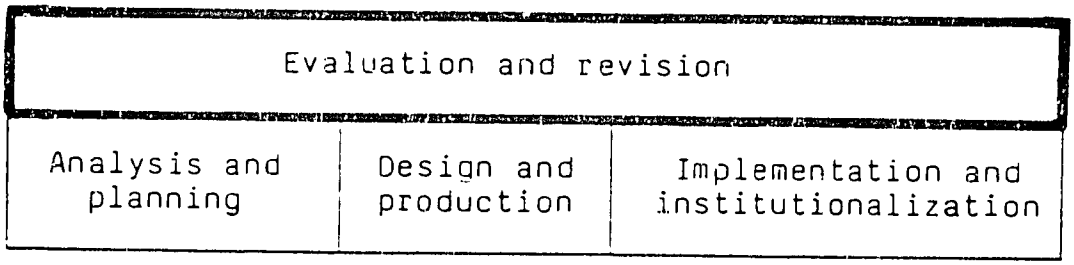
This design is done on the basis of systematic analysis -- of local needs, resources, and constraints -- and careful planning.



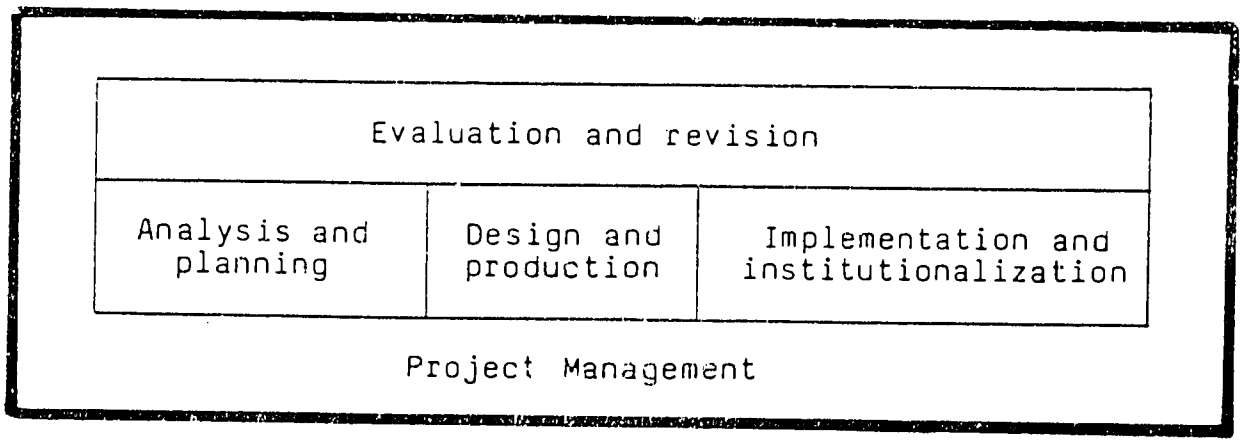
The LCL process does not stop here: It pays special attention to the implementation and institutionalization of the system. Staff members install the system and troubleshoot it during its early days. We make sure that it can be maintained locally.



We know most answers, but we do not know all the answers. Evaluation and revision is built into our process so that we constantly improve its instructional and motivational effectiveness:



We have a long and successful history of managing projects in the field. We incorporate the systematic process within our project management approach.



ANALYSIS AND PLANNING

LCL developers spend a third or their time (and other resources) in systematic analysis and planning.

They incorporate all available information and involve local colleagues in this activity.

They begin with the big picture. They analyze the various sectors of education to see how their areas of concern fit within. They analyze the characteristics and constraints, requirements and resources.

They analyze the curricular goals and content. They specify behavioral objectives for the concepts, skills, and attitudes to be taught.

They analyze the management system and its critical characteristics.

Based on these analyses, they select the most appropriate educational medium, mode, and method.

DESIGN AND PRODUCTION

During the design and production of the system LCL developers use all locally available materials and methods and add validated management strategies to create a new efficient system.

LCL has a smorgasbord of pragmatic techniques. LCL designers can work in any medium under any management system, and use a variety of validated strategies to improve the internal and external efficiencies of the system.

LCL design is directly related to the goals and plans. For example, information in an instructional text is related to a question. This question is related to a posttest item. The posttest is related to an instructional objective. The instructional objective is derived from a curricular goal. The curricular goal is based on an urgent developmental need of the nation.

LCL design is based on different types of learning. The designers use standard strategies for teaching concepts, principles, skills, procedures, and attitudes. These strategies are based on proven principles from learning theory.

IMPLEMENTATION AND INSTITUTIONALIZATION

LCL developers are in the business of implementing innovations. They analyze the felt needs of the adopters and the local climate of change. They adjust the system to make it visible and divisible, compatible and cost-effective.

Before LCL developers install the system, they prepare the physical facilities. They also prepare the people, not only teachers and students but also the parents, local leaders, administrators, and supervisors.

After installation, LCL developers monitor implementation. They install a system for materials management, teacher supervision, progress recording, and scheduling. They provide troubleshooting services and technical assistance whenever necessary. They upgrade and update the system, provide inservice teacher training, and act as a clearinghouse for sharing procedures, problems, and plans.

EVALUATION AND REVISION

Evaluative feedback is a critical factor in improving the educational system during all stages of its development. Such feedback is obtained both from expert reviewers and representative users.

During analysis and planning, evaluators listen to local colleagues as they review the basic ideas and suggest revisions. During design and production, they edit the instructional materials on the basis of expert suggestions and rewrite them on the basis of student responses and teacher reactions. They continue this evaluation-and-revision cycle until the materials produce reliable results.

During implementation and institutionalization, the evaluators monitor the materials and the methods. They adapt the system to suit realistic constraints and adopt innovative improvements from local users.

LONG-TERM INSTITUTIONALIZATION

We can manage ourselves out of business. A decade of experience in developing instructional systems in developing nations has taught us something about project management. The sooner we transfer this management to the local institutions, the more effective the educational system will be.

220

We can plan a project, do a budget, and work out the schedule. We can provide on-the-job training on these project design skills to our local colleagues.

We can predict personnel needs and produce detailed job specifications. We can recruit, evaluate, and select potential staff members and build them into a collaborative team. We can set up standard operating procedures for regular reporting, clear communications, and systematic supervision.

SPECIFIC STRATEGIES

From our experiences in developing countries and from our analyses of the state-of-the-art instructional technology, we have identified a set of appropriate strategies that provide the building blocks for the development of comprehensive instructional systems. These LCL strategies combine a variety of media, messages, methods, and materials under a management structure that capitalizes on the involvement of people from various sectors. A selection of 40 such strategies are briefly described in the following pages.

List of Selected LCL Strategies

01 Adjunct programs
02 Applied skills manuals
03 Basic skills practice
04 Community involvement
05 Competency-based teacher training
06 Construct lesson plan
07 Criterion-referenced testing
08 Educational radio
09 Educational television
10 Flexible facilities
11 Flexible scheduling
12 Framegames
13 Information mapping
14 Instructional games
15 Instructional modules
16 Instructional supervisors
17 Itinerant teachers
18 Job redesign
19 Learning posts
20 Learning teams
21 Mastery learning
22 Materials management
23 Microcomputers
24 Multigroup scheduling
25 Peer-group learning
26 Performance aids
27 Personalized system of instruction
28 Programmed learning
29 Programmed teaching
30 Programmed tutoring
31 Remediation and enrichment
32 Simulations and roleplay
33 Student tutoring
34 Systematic instructional design
35 T-G-T
36 Teaching-learning units
37 Token economy system
38 Tutoraids
39 Volunteers and paraprofessionals
40 X sheets

1. ADJUNCT PROGRAMS

DESCRIPTION	Adjunct programming is a mastery learning format that optimizes the use of conventional textbooks by providing a guide to learning or an adjunct program. The adjunct program controls the activities and learning procedures used by the learners as they study the text. It provides the learners with criterion-referenced or domain-referenced tests on specified content in the textbook. The learner self-scores the test and reviews the portions of the text that teach the items he or she missed. Its purpose is to enable learners to learn as efficiently and effectively from a good textbook.
SIMILAR STRATEGY	Programmed learning.
VARIATIONS	An adjunct program may simply extract sections of the textbook and present this as the basic information in the program. An adjunct program may leave the textbook intact and supply the program as a separate unit. Students may be branched by an adjunct program to listen to a cassette tape or a radio broadcast, view a film, make a field trip, conduct an experiment, etc.
SAMPLE APPLICATIONS	Adjunct programming is used in Project BANGLADESH/IMPACT.
EFFICIENCY FACTORS	Adjunct programs combine the progressive features of programmed instruction with the comprehensiveness of a good textbook.

Adjunct programs require relatively fewer pages than most programmed instructional materials.

Teachers can be trained to teach more effectively using adjunct programs with textbooks they are already familiar with.

Adjunct programs relieve the teachers of the tasks of planning for and carrying out instruction and enable them to monitor and facilitate learning activities more efficiently.

OPTIMUM CONDITIONS

Good textbooks are available at the ratio of at least one for every two learners.

Funds, time, and personnel are available to design and develop adjunct programs.

Independent learning using conventional textbooks is desired.

CONTRAINDICATIONS

Good textbooks are scarce.

Parental resistance toward non-conventional modes of learning is strong.

Students are non-readers or very slow readers.

EFFECTIVE COMBINATIONS

Programmed learning can be combined with adjunct programs. PL modules may be used in subject areas for which there are not enough good, affordable textbooks available to justify the use of adjunct programs.

Peer-cross-age, and cross-grade tutoring or tutoring by paraprofessionals can be combined with adjunct programs. The adjunct program itself may be used by the tutor, and it may not be necessary to prepare a separate program for the tutorial.

Adjunct programs can be combined with the use of inexpensive experiments to teach science. One characteristic of many good science textbooks is the excellent colored illustrations and pictures which are usually not feasible in many programmed instructional materials. The adjunct program can then slant the experiments to utilize locally available materials and inexpensive improvised equipment.

REFERENCES:

Langdon, D. G. The adjunct study guide. Englewood Cliffs, New Jersey: Educational Technology Publications, 1978.

Nichols, D. G. Low cost learning systems. Los Altos, California: Institute for International Research Inc., 1980.

Espich, J. E. & Williams, B. Developing programmed instructional materials: a handbook for program writers. Palo Alto, California: Fearon Publishers, 1967.

2. APPLIED SKILLS MANUALS

SIMILAR STRATEGIES	Performance aids, instructional modules, and X sheets.
DESCRIPTION	Applied skills manuals specify the materials and procedures for various arts-and-crafts projects. These projects may include shop work, agriculture, cooking, sewing, carpentry, and the like. The manual is self-contained and gives illustrated instructions for different projects that are suited for a specific age or grade level.
VARIATIONS	Applied skills manuals can be addressed to either the teacher or the student. The size of the manual and the number of activities or projects may vary depending upon the needs of a particular target audience. A manual may be used by an individual, a learning team, or by the whole class with a teacher or paraprofessional demonstrating the procedures described.
SAMPLE APPLICATIONS	Applied skills manuals are used in Projects IMPACT and IEL to meet the curriculum requirements for the elementary schools.
EFFICIENCY FACTORS	Applied skills manuals enable the students to learn practical skills with or without a live instructor. Applied skills manuals are designed to make use of indigenous materials and to suit local needs.

	The use of applied skills manuals to teach useful, practical skills enable the students to produce something that is marketable, thus enabling students to earn at the same time that they are learning. Applied skills manuals are modularized and self-contained; they can be used independently, and projects can be completed at the learner's own pace.
OPTIMUM CONDITIONS	Students can read well enough to follow simple directions and interpret simple sketches and diagrams. Students work in peer groups so that they can assist each other and provide feedback to each other in the absence of a live instructor. Students have access to basic tools and equipment that are needed to complete the projects. Paraprofessionals, parents, or other members of the community are available and willing to donate their time to demonstrate procedures described in the manuals. Time, personnel, and funds are available for the design of the applied skills manuals.
CONTRAINDICATIONS	Students are non-readers or very slow readers. The school, students, and community cannot afford the basic tools, equipment, and materials for the projects described in the manuals. There is strong parental resistance to non-conventional forms of learning. Community members are not available to assist the learners.

EFFECTIVE COMBINATIONS

Parents and other human resources in the community can support the use of applied skills manuals.

Applied skills manuals may be combined with the use of educational television to demonstrate the procedures.

Applied skills manuals can be combined with the use of itinerant teachers.

REFERENCES

Instructional Design Unit, IEL Project. How to write arts and crafts manuals. Gbarnga; Liberia: Improved Efficiency of Learning Project, 1983.

Pasigna, A.L. Project Impact: a basic integrated learning continuum for mass primary education. INNOTECH Journal, II(3), 1978.

3. BASIC SKILLS PRACTICE

DESCRIPTION	Basic skills practice provides the learners constant and repetitive practce in mathematics and language skills. The items are designed for quick, snappy responding and cover skills taught in earlier modules.
SIMILAR STRATEGY	Programmed learning.
VARIATIONS	Basic skills practice may be done in school or at home. Basic skills practice may be done before or after studying a module. Basic skills practice may be a group or an individual activity. Basic skills practice exercises/items in mathematics and language may be scheduled on alternating days. Basic skills practice may be done by an individual doing self-study or by a group as a group activity.
SAMPLE APPLICATIONS	Basic skills practice is part of the instructional system used in Projects IMPACT, PAMONG, and IEL. Modular learning in PL in any subject area includes 15 minutes of practice in answering addition, subtraction, multiplication, and division problems and language/vocabulary exercises.
EFFICIENCY FACTORS	Learning of basic skills taught in the PL modules are reinforced at regular intervals, thereby increasing the probability of long-term retention and mastery of those skills to the point of automaticity.

	The quick pace of basic skills practice helps minimize boredom and loss of interest by the students. basic skills practice exercises done as homework satisfies much of the parents' and learners' need for take-home materials.
OPTIMUM CONDITIONS	Students complete a PL module after approximately four or five hours of instructional time. Students are expected to complete a module in one subject area before starting a module in another subject area. Spaced practice is required for long term retention and mastery of a basic skill taught in a PT or PL module
CONTRAINDICATION	Students have access to effective but relatively inexpensive workbooks that provide approximately the same type of practice provided by basic skills practice exercises.
EFFECTIVE COMBINATIONS	Basic skills practice in combination with programmed teaching and/or programmed learning effectively reinforces instruction and insures mastery and long-term retention. Using the token management system in conjunction with basic skills practice further motivates the stuoents to do well during the basic skills practice sessions, individually or as a group, depending on the requirements of the system. Basic skills practice is essential for mastery learning especially in mathematics. Basic skills practice items can also be used for remediation and enrichment purposes.

REFERENCES:

Nichols, D. G. Basic skills practice sheets. Gbarnga Liberia: Improved Efficiency of Learning Project, 1982.

Seares, R. B. Practice manuals for programmed teaching. Gbarnga, Liberia: Improved Efficiency of Learning Project, 1982.

Pasigna, A. L. Manual for curriculum writers: Project IMPACT replication manual. Cebu City, Philippines: Project IMPACT, 1979.

4. COMMUNITY INVOLVEMENT

SIMILAR STRATEGIES	Use of volunteers and paraprofessionals.
DESCRIPTION	Parents and other community resources are tapped to assist in the management of learning. Their involvement may be in any of the following areas: to serve as home tutors; to tutor students in school; to serve as teacher's aides and take care of routine tasks like record keeping, test administration, and storage and retrieval of materials; to teach special skills to the students; or to serve as programmed teachers in the first two grades. Community involvement may also be in the form of donations in kind to the school, such as providing building materials or labor for the construction of simple, inexpensive learning kiosks or palaver huts to be used by peer groups engaged in programmed learning.
VARIATIONS	Instead of serving as home tutors, community volunteers may serve as tutors in school. A system can be worked out with nearby secondary schools or colleges to make their students available during certain hours of the school day to donate their time to tutor a child in the primary grades. Paraprofessionals can be hired at nominal fees to serve as instructional aides or tutors during certain hours of the day or certain days of the week.
SAMPLE APPLICATIONS	Project IMPACT draws upon the following community resources: paraprofessionals who serve as instructional aides; high school students who serve as tutors for credit as service under the Youth Civic Action Program (YCAP); parents or older brothers or sisters serving as home tutors; and other community

members to teach sewing, carpentry, and other specialized skills. Peers and older students are also used as tutors in the IEL Project.

EFFICIENCY FACTORS

Community involvement enables the system to provide individualized instruction without increasing the number of teachers and the cost of education.

Parents and older brothers or sisters who serve as home tutors also learn as they work through the programs with the learner. They become valuable allies in getting the children to attend school regularly.

Community involvement in the management of learning permits optimum utilization of available resources without increasing the cost of education.

OPTIMUM CONDITIONS

Parents and other members of the community make themselves available to the school regularly to make the system viable.

There are enough literate members of the community who can serve as home tutors or resource persons.

Parents and community members possess specialized skills and share them with the students.

The school has a system for maintaining liaison with the community and informing them of progress and needs.

CONTRAINDICATIONS

There are not enough literate members of the community who can tutor or teach special skills.

The people in the community cannot afford to make any kind of donations to the school. Even donations of time and labor would take them away from important activities that are probably their only means of livelihood.

Community members who possess the necessary skills and literacy levels to provide the needed assistance do not volunteer their services.

EFFECTIVE COMBINATIONS

Parental and community involvement can be combined with tutoring and enrichment activities in school or at home.

The use of applied skills manuals can be combined effectively with the utilization of parents and community members who possess the specialized skills needed for the project.

Parental and community involvement is critical to the success of programmed tutoring programs.

Student tutoring can be combined with the use of parental and community resources.

REFERENCES:

Nichols, D. G. Low cost learning systems. Los Altos, California: Institute for International Research Inc., 1980.

Flores, P. V. Educational innovation in the Philippines: a case study of project Impact. Ottawa: International Development Research Centre, 1981.

5. COMPETENCY-BASED TEACHER TRAINING

SIMILAR STRATEGIES	Criterion- and domain-referenced testing and systematic instructional development.
DESCRIPTION	Competency (or performance) based teacher training requires that, prior to certification, the teacher is able to demonstrate certain competencies directly relevant to the learning process. The entire teacher training program is based on measurable and clearly stated competencies that are derived from an analysis of the teaching task and of validated instructional principles. The training materials and methods are directly related to these competencies and not to any theoretical or conceptual framework of dubious relevance. Teachers are required to demonstrate their mastery of these competencies in criterion-referenced performance tests.
VARIATIONS	Competency-based teacher training can be either pre-service or in-service training. Competency-based teacher training may be modularized or totally instructor-mediated.
SAMPLE APPLICATIONS	The training of teachers in the IEL Project is competency based. The objectives for the training workshop are derived from the task requirements of the teacher who will conduct programmed teaching sessions or manage programmed learning groups. The workshop is of a practical nature and primarily involves demonstrations of various competencies and guided practices in the same competencies until they are mastered.

EFFICIENCY FACTORS

By ensuring mastery of competencies rather than abstract theory, we are able to make teacher training more effective and less time-consuming.

By deriving teacher competencies from teacher tasks and instructional skills related to student learning, we ensure external efficiency of our teacher training program. Competency-based teacher training lends itself to mediated instruction. Many of the competencies can be acquired through independent or small-group learning. This flexibility enables us to use a variety of cost-effective strategies.

Competency-based teacher training can be designed for pre-service or in-service training for a relatively shorter period. In the latter case, undertrained or untrained techers already in the system do not have to be sent back to teacher training institutions to undergo four-years of teacher training. This makes the competency-based teacher training a very cost-effective strategy.

Competency-based teacher training provides a model for the newer efficient educational systems which we are recommending for the students. Thus we are able to preach to the teachers in a mode in which we would like them to practice.

OPTIMUM CONDITIONS

A large number of teachers have to be trained within a short period of time.

Teachers have to be trained to implement a specific instructional innovation rather than the conventional classroom teaching procedures.

Training is related to specific curricular changes or to specific instructional materials for the student.

Training is to be conducted by specialists rather than by generalists from teacher-training institutions.

CONTRAINDICATIONS

Traditional teacher training institutions have a vested interest in maintaining conventional practices.

Teachers are overqualified.

The school administration does not support competent teachers by providing them with newer materials and methods.

The value of training is equated to period of time spent in classrooms rather than to the outcomes.

Teachers have been in conventional service for a long period of time.

EFFECTIVE COMBINATIONS

Competency-based teacher training has to be supported by criterion- and domain-referenced testing.

Competency-based teacher training will be supported by systematic instructional development.

Many of the innovative instructional materials (e.g., programmed learning modules, adjunct programs, performance aids, construct lesson plan, and PSI) can be incorporated in the competency-based teacher training programs.

REFERENCES

Peter, L. J. Competencies for teaching individualized instruction. Belmont, California: Wadsworth, 1975.

Gilbert, T. F. Human competency: Engineering worthy performance. New York: McGraw-Hill, 1978.

Thiagarajan, S., Semmel, D. S., & Semmel, M. I. Instructional development for training teachers. Reston, Virginia: Teacher Education Division, The Council for Exceptional Children, 1974.

6. CONSTRUCT LESSON PLAN

SIMILAR STRATEGIES	Programmed teaching and systematic instructional design.
DESCRIPTION	The construct lesson plan is a flexible lesson plan from which a teacher can build an outline for the lesson. The construct lesson plan is printed on a series of cards. Each card contains an identification number, a statement of the instructional objective, one or more criterion test items, list of instructional materials, a content outline divided into topics and subtopics, space for personal notes, and a series of enabling questions. Prior to presenting the lesson, the teacher assembles an appropriate set of these cards in a suitable sequence for the day's lessons. S/he uses these cards to make the instructional presentation, elicit student responses, test them informally, provide remedial instruction, and continue the process until all the instructional objectives for the lesson have been mastered by the students.
VARIATIONS	The level of detail provided in the individual cards may vary. At the most detailed level, the construct lesson plan becomes a programmed teaching module.
SAMPLE APPLICATIONS	In the IEL teaching-training workshops, trainers use an expanded outline which is similar to this strategy.
EFFICIENCY FACTORS	By systematically precesigning and organizing the lesson plan, the instructional design activity is removed from the teacher's responsibility. The teacher can present a reliable and effective lesson without taking time to prepare the lesson.

Systematic instructional design requires significant investments of time. In this strategy, only the analysis and the initial outlining of instruction needs to be completed. Actual details are left for the teacher to complete.

Construct lesson plans can be used flexibly by the teacher. This makes the design more acceptable to the teacher and more efficient in implementation.

OPTIMUM CONDITIONS

Teacher-led classroom presentations are the primary instructional format.

Teachers have sufficient expertise in the subject-matter area (or can acquire such expertiese through reference materials) to flesh out the lesson plan.

Teachers are capable of resequencing the lessons to suit local needs.

CONTRAINDICATIONS

Teachers lack the necessary expertise in the content area.

Teachers are likely to become verbose and lecture in the conventional mode without using the enabling and criterion questions.

The subject area is more skills-oriented than information- oriented.

EFFECTIVE COMBINATIONS

Construct lesson plans may be used with programmed teaching materials. Critical, basic skills and concepts may be presented through programmed teaching in the initial stages. Construct lesson plans may be used with less important skills and concepts later.

Construct lesson plans may be used by volunteers and paraprofessionals in teaching a class in a subject area they are familiar with.

Construct lesson plans are effective in providing competency-based training to the teachers and to other members of the school staff.

REFERENCES

Langdon, D. G. The construct lesson plan. Englewood Cliffs, New Jersey: Educational Technology Publications, 1978.

Langdon, D. G. The construct lesson plan: Taking the inefficiency out of group and classroom instruction. Programmed Learning and Educational Technology Journal, 1977, 14(3).

7. CRITERION-REFERENCED TESTING

SIMILAR STRATEGIES	Systematic instructional design and competency-based teacher training.

DESCRIPTION

Criterion-referenced tests are constructed to directly measure the attainment of specific behavioral objectives. In this type of test, the performance of a student is compared against the instructional objectives in contrast to norm-referenced tests in which the performance of a student is compared against those of other students in a normative group. Criterion-referenced tests help us to diagnose student weaknesses and to prescribe appropriate remedial action, or to place the student at an appropriate level of instruction. (In contrast, norm-referenced tests are ideal for categorizing students and for selecting the relatively more able ones.)

Domain-referenced tests are similar to criterion-referenced tests except they assess a class of behaviors rather than a specific behavior. This instructional objective lends itself to a criterion-referenced item:

> "To list the three effects of slave trade in the development of West Africa"

whereas this instructional objective lends itself to a domain-referenced item:

> "To identify the primary effect of slave trade incorporated in a short fictionalized paragraph in a West African setting around mid-19th century."

Domain-referenced tests enable us to easily come up with many parallel versions to measure the attainment of the same instructional objective.

The use of criterion- and domain-referenced tests for all student examinations (including final achievement examinations) provide significant economies in the educational system.

VARIATIONS	Criterion- and domain-referenced tests may be used for internal, instructional assessments and for teacher decision making regarding remediation, enrichment, and placement. Norm-referenced tests in the same areas may be used for external examinations and for administrative decision making regarding promotions and ratings.
SAMPLE APPLICATIONS	All module tests, block tests, semester tests, and final examinations in Projects IMPACT and IEL are criterion- and domain-referenced. Parallel forms of these tests have been created and used for retesting purposes. (However, achievement tests for comparative summative evaluation are norm-referenced.)
EFFICIENCY FACTORS	Examinations are the prime motivators of student learning in developing nations. Sooner or later, all schools focus all their resources in preparing their students to perform creditably in these examinations. The efficiency of the educational system--especially its external efficiency--is dependent upon the validity of these examinations. By making them criterion-referenced, we can ensure their validity and improve the effectiveness and efficiency of the educational system. Criterion-and domain-referenced tests enable us to diagnose specific weaknesses in the learner and in the instructional system and to take targeted remedial action to compensate for these deficiencies. Criterion- and domain-referenced tests are easier and less expensive to construct. They do not require the lengthy item analysis and standardization procedure.
OPTIMUM CONDITIONS	The curriculum has been converted into a set of specific behavior objectives.

Criterion- and domain-referenced tests are already available. If not, there is sufficient time, money, and competent personnel to construct them.

Instructional materials are systematically developed on the basis of the same set of specific objectives.

CONTRAINDICATIONS

National examinations are administered at the end of a semester to select and classify students on a norm-referenced basis.

National examination centers have a vested interest in the traditional norm-referenced test construction.

EFFECTIVE COMBINATIONS

Criterion- and domain-referenced tests may be incorporated in different instructional materials such as programmed teaching, programmed learning, adjunct programs, and instructional games.

Criterion- and domain-referenced tests are used with mastery learning. If the student performance on these tests do not indicate mastery of the instructional objectives, he or she is required to repeat the instructional module.

Criterion- and domain-referenced tests are administered by itinerant teachers or in learning posts when the results are to be used for making administrative decisions.

REFERENCES

Bloom, B. S., Hastings, J. T., & Mandaus, G. F. Handbook of formative and summative evaluation of student learning. New York: McGraw-Hill, 1971.

Popham, W. J. (Ed.) Criterion referenced measurements: An introduction. Englewood Cliffs, New Jersey: Educational Technology Publications, 1971.

Hively, W. Domain-reverenced testing. Englewood Cliffs, New Jersey: Educational Technology Publications, 1976.

242

8. EDUCATIONAL RADIO

SIMILAR STRATEGIES	Educational Television
DESCRIPTION	In educational radio, lessons are broadcast live or taped for replay at designated hours. Students either listen to the broadcast in school or at home, depending upon the hour of broadcast. These broadcasts may be supported by a student's manual or a text. Tests are administered by the teacher or by a designated proctor. A radio lesson can cover almost any subject area. Effective lessons teach the production of basic language sounds, words, and sentence patterns in the native language or in a second language. These may include listening to models producing the foreign sounds and listening to stories, informational text, and dramatization for listening comprehension. Other lessons can direct learners how to solve basic arithmetic problems or how to conduct science experiments.
VARIATIONS	Cassette tapes can be used instead of educational radio, (although the tapes are definitely more expensive than radio broadcasts.)
SAMPLE APPLICATIONS	Educational radio is being effectively used to teach elementary school mathematics in Nicaragua's Radio Mathamtics Project. The Mexican Radioprimaria aids fourth, fifth, and sixth grade education in rural and semirural areas which lack a complete primary school. Prime time donated by the leading radio station in Cebu City, Philippines is used for language and reading lessons in Project IMPACT. A radio language arts program is currently being implemented in Kenya. In Liberia we are developing a rural radio network which will assist in teacher training and elementary education projects. Foreign language lessons are broadcast in many developing countries.

EFFICIENCY FACTORS	Language and reading lessons taped by professional announcers and used in Project IMPACT have been very effective in providing excellent models for teaching the production of English sounds, words, and sentence patterns. Both the teachers and the students have benefited from these lessons. Students who are unable to attend schools regularly but who have access to radio sets can still benefit from lessons aired over the radio. A well-designed radio lesson ensures reliable, high quality instruction for both rural and urban listeners. A relatively large number of students can be reached through educational radio than could ordinarily be reached by teachers in a face-to-face situation in conventional classrooms. The same lesson can be translated into and delivered in different languages and dialects to suit the needs of different linguistic groups.
OPTIMUM CONDITIONS	Schools or students have access to inexpensive transistorized radio sets. Time, personnel, and funds are available to design, produce, and broadcast the radio lessons. A monitor or a proctor follows up the radio lesson by giving tests and by providing feedback. The schedule of broadcast lessons are correlated to the school schedules.
CONTRAINDICATIONS	Radio sets are scarce and expensive. Radio lessons are not reinforced by systematic follow-up activities.

Students do not listen regularly to the radio lessons.

Parental resistance to the replacement of live teachers by the radio is strong.

Suitable broadcasting facilities and competent broadcast technicians are not available in the country.

EFFECTIVE COMBINATIONS

A combination found to be very effective in Project IMPACT consists of radio lessons followed by direct instruction by the programmed teacher.

Educational radio can be used effectively to support independent instruction in programmed learning modules.

REFERENCES

Jamison, D. T., Kless, S. J., and Wells, S. J. The cost of educational media: Guidelines for planning and evaluation. Beverly Hills, California: Sage Publications, 1978.

Jamison, D. T. and McAnany, E. G. Radio for education and development. Beverly Hills, California: Sage Publications, 1978.

Crowley, D. et al. Mass media manual manual: How to run a radio learning group campaign. Bonn, West Germany: Friedrich Ebert Stiftung, 1981.

9. EDUCATIONAL TELEVISION

SIMILAR STRATEGY	Educational radio.
DESCRIPTION	Educational television programs are broadcast TV programs designed to teach specific content to specific learners. Recently, this mass medium has become an individual medium. The development of inexpensive videorecorders, videotape, and videodiscs enable a student to view the materials on an individually-prescribed basis.
VARIATIONS	ETV programs cover a gamut of subject areas. They range from slick animated productions to simple broadcasts of lectures from the studio classrooms.
SAMPLE APPLICATIONS	The Korean Elementary/Middle School Project uses ETV (and some radio) to provide instruction to students in grades two to nine. In Mexico, Telsecundaria is used to extend secondary school system in rural areas. Data from the Corporation of Public Broadcasting (for 1979) indicate that such ETV programs as The Electric Company, Sesame Street, Ripples, and Villa Allegre are used in hundreds of thousands of primary classrooms in the U.S. India and Brazil are experimenting with large-scale ETV projects using satellite relays to reach remote areas.
EFFICIENCY FACTORS	In places where it is available, television can serve as a powerful delivery system. It can bring some of the most effective teachers and systematically designed instruction to the reach of remotest localities. Very little recurrent costs are directly associated with the use of television. Significant savings in personnel costs can be

realized if TV is used to provide basic instruction and paraprofessionals are used for followup work.

Educational television can be used to provide instruction in newer curricular areas where subject-matter expertise is not widely available in the country.

ETV is especially useful for demonstrating science experiments and arts-and-crafts activities.

OPTIMUM CONDITIONS

ETV is integrated with other instructional activities in the classroom.

Television lessons are followed up by systematically structured local activities.

Television broadcast schedules are correlated to school schedules.

Television is used for instruction in areas where the medium is most suited: areas that require moving visuals and sound.

CONTRAINDICATIONS

Producing a television program is a complex activity. If suitable facilities and personnel are not available in the centralized ETV broadcasting agency, problems may occur.

Designing instruction for TV requires systematic planning. If the producers attend just to the television qualities and ignore the instructional quality, the effectiveness of ETV is bound to suffer.

Broadcast television requires lockstep scheduling. If the programs are not repeated frequently, classroom scheduling flexibility is lost.

ETV requires heavy capital investment for the purchase and installation of television sets in schools. It also requires a reliable and steady source of electricity and technicians

for maintaining the receivers. Without this type of support, investment in ETV may become a total waste.

EFFECTIVE COMBINATIONS

For best effects ETV should be combined with programmed teaching or peer-group activities for local follow up.

ETV can be used as one of the resources for such individualized instructional systems as teaching-learning units.

The process of systematic instructional development can be applied to the production of effective ETV programs.

REFERENCES

Combes, P. and Tiffin, J. Television production for education. New York: Focal Press, 1978.

Hillard, R. L. and Hyman, H. F. Television and the teacher: A handbook for classroom use. New York: Hastings House, 1976.

Thiagarajan, S. The loneliness of the long-distance learner. In Learning via telecommunications. Washington, D. C.: Association for Educational Communications and Technology, 1978.

10. FLEXIBLE FACILITIES

SIMILAR STRATEGY	Learning centers.
DESCRIPTION	This strategy involves a functional design of school buildings, classrooms, and other facilities in order to optimize their use. Such design may be applied to the remodeling of already existing facilities or to the construction of new facilities. Traditional classrooms and buildings are designed for use with a teacher-centered, formal education. Many of the newer educational efficiency approaches require more flexible spaces and furniture for individual and small-group work. Instructional space and facilities design require that we carefully identify these requirements on the basis of the materials and modes of learning that we are going to employ. This strategy also involves making maximum use of locally available construction materials and volunteer helpers to build or modify the school facilities in order to meet the current instructional and climatic conditions.
VARIATIONS	Facilities design may affect the entire school building, classrooms, special-purpose rooms (e.g., library and auditorium), furniture, storage areas, and instructional equipment.
SAMPLE APPLICATIONS	In Project IMPACT, small kiosks are built for use by PT groups. Rooms in the learning centers are divided into "learning spaces" and testing areas. In IEL, walls between smaller classrooms were torn down in order to facilitate teacher monitoring of PL groups from grades 4, 5, and 6. On nice days, smaller practice and review groups are encouraged to work outdoors under the trees to

permit these groups to make loud oral responses to questions.

OPTIMUM CONDITIONS

New school facilities are about to be constructed.

The school administration and the community are willing to accept unconventional designs.

There is sufficient interest in the community to volunteer construction labor, materials, and necessary funds.

Creative designers, architects, and skilled labor are available in the community.

CONTRAINDICATIONS

Solid expensive school buildings with rigid configurations have already been built.

Ample funds are available for the construction of the school buildings and the community is motivated to build impressive monuments.

EFFECTIVE COMBINATIONS

Many of the individual and small-group learning approaches (e.g., programmed learning, learning teams, tutoring, instructional games, framegames, and simulation and roleplay) can benefit from facilities design.

Scheduling can be combined with facilities design in order to make maximum use of available physical resources. For example, the same classrooms may be used in different shifts. Folding screens can be scheduled to create portable walls at appropriate periods.

REFERENCES

Nichols, D. G. Plans for IEL classrooms and module storage boxes. Gbarnga, Liberia: The Improved Efficiency of Learning Project.

Green, A. C. (Ed.) Educational facilities with new media. Washington, D.C.: Department of Audiovisual Instruction, 1964.

Council for Educational Facility Planners, International. Guide for planning education facilities. Columbus, Ohio: CEPP, 1976.

11. FLEXIBLE SCHEDULING

SIMILAR STRATEGY	Flexible facilities design.
DESCRIPTION	Inefficient use of instructional time may be reduced through detailed planning and scheduling. These schedules should also be flexible and contain provisions for catching up after unavoidable delays. The annual schedule identifies modules to be covered or instructional objectives to be mastered on a day-by-day basis. This schedule should also identify holidays, vacations, examinations, registration, and other noninstructional events. It should be realistic and should have sufficient slack for unanticipated delays, and teacher and student absenteeism. The daily schedule should indicate regular class periods and what is to be done during those periods. The schedule should realistically set aside time slots for opening ceremonies, recess, physical education, arts and crafts, tests and examinations, remedial instruction and other noninstructional events. Schedules for self-paced or peer-group-paced instruction should specify minimum progress points. Teachers should be provided with instructions on how to keep records on individual student progress and test performance, how to recognize actual and potential delays, and how to prioritize instructional activities.
VARIATIONS	All types of flexible variations are possible to suit the local needs. The school may work more than one shift to accommodate large enrollments and the conveniences of part-time students. The school may also work all the year around without major vacation periods. Individual progress plans may enable the students to move to the next grade whenever

they master all the modules or objectives for a specific grade.

SAMPLE APPLICATIONS

Detailed annual and daily schedules are provided in the IEL system. For example, programmed teachers are given exact dates for the completion of various modules. If there were any unavoidable delays, the Instructional Supervisor uses a reference page to determine which lessons or modules should be dropped without neglecting basic skills and concepts.

Detailed class and group schedules reflecting time- reducing procedures have been used in Thailand on the RIT (Reduced Instructional Time) Project. This project has tried out instructional procedures for reducing the time required for learning and the time required of the teacher for instruction and guidance.

EFFICIENCY FACTORS

Major inefficiencies in primary education in developing nations occur from a lack of planning. With this type of scheduling we can increase the number of school days and instructional time during each day.

Usually, when there are unanticipated disruptions, teachers continue to "cover" the curriculum at the usual pace and sequence. By specifying priorities among the objectives to be covered, we can ensure efficient use of reduced time.

Self-pacing or small-group pacing enables faster learners to make efficient use of their time. However, slower and less motivated learners tend to lag behind. With a minimum coverage schedule, we can reduce such procrastination.

OPTIMUM CONDITIONS

There is a national educational calendar which specifies the minimum required number of school days and instructional time for each day. Educational officers supervise the implementation of the annual and daily schedule.

Teachers and students are motivated to attend school on a regular basis and to stick to their schedule.

Clocks and bells are used to help teachers and students to keep track of the class periods.

CONTRAINDICATIONS

The school calendar does not correspond to local holidays, market days, and seasonal needs.

The schedule is unrealistically tight.

No time is set aside for extracurricular, athletic, and administrative activities.

The principal and other administrators do not supervise the schedule.

EFFECTIVE COMBINATIONS

Modularized instructional materials lend themselves to flexible scheduling.

Volunteers and paraprofessionals may assist the teachers in keeping records of individual student progress to permit self-pacing schedules.

REFERENCES

Bamber, C. Student and teacher absenteeism. Bloomington, Indiana: Phi Delta Kappan Educational Foundation, 1979.

Thomas, G. I. Administrator's guide to year-round schooling. West Nyack, New York: Parker Brothers, 1973.

Nichols, D. G. IEL system implementation handbook. Gbarnga, Liberia: Improved Efficiency of Learning Project, 1983.

255

12. FRAMEGAMES

SIMILAR STRATEGIES	Instructional games and simulations and roleplay
DESCRIPTION	A framegame is an instructional game in which the content can be easily separated from the mechanics of play and replaced with some new content. For example, the essence of the card game Rummy involves the creation of sets from elements that vary along two dimensions (suit and value). The Rummy frame can be used to create a language arts game with cards that contain different words. The players are required to assemble sets of cards with the same type of words (e.g., nouns or adjectives) or with different forms of the same word (e.g., eat, eatable, and eating). The same frame can be used to create a reading game in which the players are required to collect cards with the same vowel sound or the same letter with different sounds. A mathematical game may use cards with arithmetic sentences. The players are required to collect cards which have the same answers and different operations or the same operations with different answers. A science game may require the players to collect cards with the same parts of the body from different animals or different parts of the body of the same animal. A social studies game may require the players to collect cards with pictures of the same family member doing different things or different family members doing the same thing.
VARIATIONS	The framegame can vary on such dimensions as the degree of competition, amount of materials needed, number of players, complexity of rules, element of chance, and type of instructional objectives.
SAMPLE APPLICATIONS	In IMPACT, a framegame called the Team Game is used as a final check of skills learned in the programmed teaching sessions. In the IEL

Project, students play the Team Game to quiz each other at the end of a Programmed teaching module.

EFFICIENCY FACTORS

Games are motivating and good framegames use this motivational effect to produce efficient learning.

Students do not have to spend time in learning the mechanics of the game each time an instructional game is played. Once they have mastered the basic rules of a framegame, they can use it repeatedly with content from different subject-matter areas. Time is used in learning the content rather than in learning the game.

Teachers can very easily load new content on a framegame. This instructional format has great flexibility.

Designing an effective instructional game is usually a time-consuming process. With the framegame approach, the design and developmental time can be significantly shortened.

OPTIMUM CONDITIONS

The basic framegame is derived from some local folkgame.

There is sufficient space for small groups to play the framegame without disturbing each other.

The content of the framegame is directly related to relevant instructional objectives.

The rules of the framegame are simple.

The framegame requires little or no equipment.

The chance element in the framegame is carefully controlled to reinforce the mastery of relevant academic skills while maintaining the interest level of all players.

CONTRAINDICATIONS

Teachers, parents, and the school administration look down upon the use of games as a frivolous waste of time.

The games are not correlated to instructional objectives.

The games are not integrated with other classroom activities.

Students do not follow the rules of the framegame.

The game element becomes too exciting for the students to benefit from its instructional aspects.

EFFECTIVE COMBINATIONS

Framegames can be effectively incorporated in the T-G-T strategy.

Volunteers and paraprofessionals can supervise the play of the framegame.

Framegames can be used in a multigroup schedule to keep the other groups occupied while the teacher works directly with one group of students.

Framegames can incorporate effective basic skills practice.

REFERENCES

Stolovitch, H. D., & Thiagarajan, S. Framegames. Englewood Cliffs, New Jersey: Educational Technology Publications, 1978.

Pasigna, A. L. Interactive learning adds impact to the first grade. NSPI Journal, 1979, 18 (7).

13. INFORMATION MAPPING

SIMILAR STRATEGY	Programmed learning
DESCRIPTION	Information mapping is a special format for the design of printed instructional materials. In this format, units of instructional content are classified into concepts, structures, processes, procedures, classifications, and facts. Each type of content has a standardized presentation format called an information map; each map is made up of different blocks. For example, a concept map may include the following blocks: name of the concept. introduction, examples, definition, nonexamples, notation, and related maps. A procedure map may include these blocks: name of the procedure, procedure table, flowchart, occassion for starting, when to stop, decision table, checklist, and worksheet. Rules for writing different blocks and for assembling them into maps are based on principles of instructional design and learning theory. Usually maps are assembled into units and the units into courses. Other unique features of the information mapping format include marginal labels, uniformity of headings and subheadings, local indexes, and feedback questions.
VARIATIONS	Information mapped materials can be selectively used to cover certain critical areas of the curriculum. They can be gradually developed over a period of years. Sections of conventional textbooks can be modified into information maps.
SAMPLE APPLICATIONS	In the Brazilian Bases for Access to the Segundo Grau-- Mathematics project, Alexander Romiszowski (1982) created a number of information maps to teach mathematical concepts and procedures to adolescent students. Results of the summative evaluation

	suggest that information mapping may be more effective than programmed learning modules of the linear format.
EFFICIENCY FACTORS	Information mapped materials can be developed more rapidly than programmed learning or programmed teaching modules. Teachers are relieved of the tasks of planning for and presenting lessons. This gives them more time to closely monitor and manage student learning. Information mapped materials can be used for self-paced or small-group-paced instruction. This will permit significant savings of instructional time.
OPTIMUM CONDITIONS	Students have sufficient reading skills and independent study skills. Funds, time, and personnel are available to produce information mapped instructional materials. Students are motivated to complete the curriculum requirements efficiently.
CONTRAINDICATIONS	Competent subject-matter experts and instructional designers are not available. The reading level of the students is low. Systematic procedures for the distribution and sharing of instructional materials are not implemented.
EFFECTIVE COMBINATIONS	Learning from information maps can be made more effective through some tutoring system and through supervision by volunteers and paraprofessionals.

Criterion- and domain-referenced testing programs can reinforce learning through information maps.

Different types of small group learning procedures and instructional games may be combined with information maps to compensate for the long periods of isolated learning.

REFERENCES

Horn, R. E. How to write information mapping. Lexington, Minnesota: Information Resources, 1980.

Jonassen, D. H. (Ed.) The technology of text: Principles for structuring, designing, and displaying text. Englewood Cliffs, New Jersey: Educational Technology Publications, 1982.

SIMILAR STRATEGIES	Framegames and simulations and roleplay
DESCRIPTION	Instructional games are interactive small-group activities with an element of conflict and with rules for making moves and for winning. These games require the mastery of instructional objectives to win. They are designed for independent play by children with little or no intervention by the teacher.
VARIATIONS	Instructional games may vary on such dimensions as the degree of competition, amount of equipment needed, number of players, complexity of rules, element of chance, and type of instructional objectives.
SAMPLE APPLICATIONS	Hundreds of instructional games are commercially available in developed nations. Most folk games in developing nations can be easily converted into instructional games.
EFFICIENCY FACTORS	Most instructional games are highly motivating. They motivate the students to learn efficiently. Most instructional games can be used with little or no need for teacher supervision. Instructional games require transfer and application of academic skills and knowledge. They make abstract concepts concrete. Hence they result in effective education.
OPTIMUM CONDITIONS	The games are directly related to some instructional objective rather than being mere fun activities.

The games are simple, fast-paced, and replayable. They do not require lengthy instruction for learning how to play.

The games require little or no equipment.

The games involve small groups of three to five children so that all students in a class can participate.

Children do not become too disruptive in playing the games.

There is sufficient space for small groups to play the games without disturbing each other.

CONTRAINDICATIONS

Excessive use of games make children disinterested in other types of instruction.

Teachers, administrators, and the parents feel that the games are a waste of time.

The games are not correlated to instructional objectives.

Children are not prepared to play these games correctly. They are not debriefed to check their learning.

EFFECTIVE COMBINATIONS

Volunteers and paraprofessionals can supervise the play of instructional games.

Multigroup scheduling may use instructional games to keep the other groups occupied while the teacher works directly with one of the groups.

Games can be used to reinforce concepts and skills acquired from independent, individual study.

Games can be used to heighten the interest level of repeated drill practice in basic skills.

---

15. INSTRUCTIONAL MODULES

SIMILAR STRATEGY	Programmed learning.
DESCRIPTION	An instructional module is a self-contained unitary material dealing with a single topic (or a single set of related topics) from a larger subject area. Often, they are small interchangable units that are plugged into larger systems of instructional management. Most instructional modules include objectives, pre- and post- tests, and instructional content.
VARIATIONS	Most modules are designed for self instruction, but it is possible to design them for use in small groups (e.g., peer-group learning) and for use by teachers (e.g. programmed teaching). Most modules are programmed to require frequent active student responses, but they may also be designed in conventional prose style.
SAMPLE APPLICATIONS	Instructional materials used in the IEL Project, Project IMPACT, and other related projects are in a modular format.
EFFICIENCY FACTORS	Modularized instruction provides flexibility in the design and maintenance of comprehensive management systems. Instructional modules permit flexible scheduling. Different students (or groups of students) may work on different modules at the same time. Hence we do not need a copy of each module for each student. Instructional modules permit students (or groups of students) to work at their own pace. This permits optimum efficiency.

Built-in module tests enable the teacher to identify individual errors and to provide specific remedial help before such errors accumulate into major learning problems.

OPTIMUM CONDITIONS

The curriculum is stated in terms of specific behavioral objectives. If not, funds, time, and personnel resources are available to operationalize the curriculum into a set of learning objectives.

Instructional materials are available in a modular form. If not, they can be easily converted into this form.

Each module is designed to require approximately same periods of instructional time.

Students and teachers are motivated to work as efficiently as possible and complete the modules within the scheduled time period.

The overall instructional system can incorporate modular instruction.

CONTRAINDICATIONS

The modules are not self contained (or clustered into blocks) to permit variable scheduling.

A lockstep schedule requires all students to work on the same module at the same time.

Teachers are not able to administer and score posttests and to keep records of individual student progress.

EFFECTIVE COMBINATIONS

Personalized system of instruction and mastery learning format can be used to effectively incorporate the modules into a general instructional system.

Programmed learning, teaching, and tutoring materials can be designed in a modular format.

Flexible scheduling can permit efficient use of modules.

Volunteers and paraprofessionals can assist the teacher in record-keeping tasks.

REFERENCES

Russell, J. D. Modular Instruction. Minneapolis, Minnesota: Burgess, 1972.

Russel, J. D. and Johaningsmeier, K. A. Increasing competence through modular instruction. Dubuque, Iowa: Kendall/Hunt, 1981.

266

16. INSTRUCTIONAL SUPERVISORS

SIMILAR STRATEGY	Job redesign.
DESCRIPTION	The instructional supervisor manages and facilitates the learning activities of students. Unlike the teachers in the traditional system, instructional supervisors in Project IMPACT do not lecture to a class or act as the main source of information. The instructional modules have already been developed by competent instructional designers, and the instructional supervisors orchestrate and facilitate the various learning activities of 100 to 200 multi-level students. Instructional supervisor's responsibilities include teaching children how to learn from the modules; keeping records of pupil progress, assisted by an aide; diagnosing pupil weaknesses and assigning tutors or directly providing remedial assistance; and tapping community resources. In the IEL Project, the instructional supervisors train the PT and PL teachers and provide supervisory assistance to five schools.
VARIATIONS	The instructional supervisor's roles can be shared with the principal. The size of the classes for which an instructional supervisor is responsible may vary, depending on the school population and the number of supervisors in that school. The instructional supervisor may be assisted by aides and older students instead of adult volunteers.
SAMPLE APPLICATIONS	Instructional supervisors are part of the IMPACT, PAMONG, and IEL management systems.

EFFICIENCY FACTORS	The changed role of the teacher to that of instuctional supervisor enables him/her to handle larger classes as efficiently, as the teacher in the conventional system with a smaller class. The instructional supervisor is able to give more individualized attention and guidance to the learners than a conventional classroom teacher. The instructional supervisor's changed role permits a more flexible scheduling of instructional and non-instructional activities in the classrooms. Teaching the children how to learn at the start of school enables the instructional supervisor to allow the students to proceed with their own learning activities without constant direct intervention and thus gives the IS more time to attend to the other more important responsi- bilities that require professional skills and decision making
OPTIMUM CONDITIONS	Programmed learning and modularized instruction are used with the group of students assigned to an instructional supervisor. The concept of an instructional supervisor is acceptable to the teachers, the school administrators, and the community. Teachers are willing to change from their role of lecturer and source of information to that of manager and faclitator of learning.
CONTRAINDICA- TIONS	Teachers and school administrators are unable to accept changes in their roles. There is strong parental resistance toward giving the students the more active role in the educational process and shifting the teacher's role to that of facilitator of learning.

EFFECTIVE COMBINATIONS

The instructional supervisor's job is most efficiently carried out when the learning system makes use of programmed learning and modularized instruction.

Instructional supervisors combined with educational radio or educational television can promote effective learning in rural situations.

The use of instructional supervisors in a system is optimized when students work as learning teams or peer groups and student tutoring is an integral part of the learning system.

REFERENCES

Nichols, D. G. IEL Implementation handbook. Gbarnga, Liberia: The Improved Efficiency of Learning Project, 1982.

United States Agency for International Development. A Low Cost Alternative for Universal Primary Education in the Philippines. Washington, D.C.: AID Evaluations Publications, 1982.

269

17. ITINERANT TEACHERS

SIMILAR STRATEGIES	Community involvement, job redesign, and volunteers and paraprofessionals.
DESCRIPTION	Itinerant teaching is instruction carried out by a teacher who travels from school to school. An itinerant teacher may be a master teacher, a special teacher (specialist in subject areas like arts and crafts, home arts, shop work, agriculture, scouting, and music). Itinerant teachers belong to the formal school system and receive compensation for their work, which make them distinct from community members with special skills who may volunteer their services when needed.
VARIATIONS	An itinerant teacher may go from class to class in a big school instead of from school to school. Itinerant teaching can be done by community members with specialized skills. These itinerant teachers could be paid by the school system on a contractual basis.
SAMPLE APPLICATIONS	Itinerant teaching is used in the Philippines to supplement Project IMPACT to meet the school requirements for scouting, music, arts, and physical education.
EFFICIENCY FACTORS	Itinerant teachers take care of co-curricular activities required by the school system. Itinerant teachers can be used to demonstrate procedures in the applied skills. Itinerant teachers can supervise students who view a film strip, go on a field trip, interview a person in the school or in the community. They may also inspect and give

feedback on school agricultural projects such as making vegetable or flower gardens, or raising hogs and poultry.

OPTIMUM CONDITIONS

The school system has a cadre of itinerant teachers to teach highly specialized skills or to conduct training in scouting, physical education, and other similar activities.

School schedules and facilities permit the use of itinerant teachers regularly (once a week or biweekly).

Funds are available to pay the salaries of itinerant teachers.

There are enough schools in close proximity to keep the itinerant teacher functionally occupied five days a week.

Transportation facilities are available to enable the itinerant teacher to travel from one school to the next within a reasonable period of time.

CONTRAINDICATIONS

The school system does not have teachers with specialized skills who can work as itinerant teachers.

The school system does not have the funds or the facilities for itinerant teaching.

Schools are too far apart to justify the use of itinerant teachers.

There are no reliable means of transportation to schools to be served by itinerant teachers.

EFFECTIVE COMBINATIONS

Itinerant teaching can be effectively combined with the applied skills manuals and arts and crafts manuals.

Itinerant teaching can be combined with community involvement. Community members who offer their services free may need

transportation facilities to enable them to travel to different schools. The school's only concern in this case would be to provide the necessary transportation facilities.

REFERENCES

Flores, P. V. Educational innovation in the Philippines: a case study of project IMPACT. Ottawa, Canada: International Development Research Centre, 1981.

Research Division, INNOTECH. Instructional management in IMPACT. Manila, Philippines: Regional Center for Educational Innovation and Technology, 1979.

212

18. JOB REDESIGN

SIMILAR STRATEGIES	Programmed teaching, volunteers and paraprofessionals, and student tutoring
DESCRIPTION	The role of the traditional teacher in developing nations has been based on the needs of an obsolete and inefficient instructional system. More efficient systems require differentiated staffing among educators and the redesigning of the teacher's role to be that of managers of learning and supervisors of paraprofessional assistants and instructional groups. Classroom lecture time should be minimized to encourage more active learning. The lesson planning function of the teacher can be shifted to more knowledgeable instructional designers and subject-matter specialists. Repetitive drill practice chores and record-keeping and behavior management tasks can be shifted to paraprofessional assistants, volunteers, and older students.
VARIATIONS	Many different levels of instructional implementors can be identified. Different personnel can handle various combinations of these tasks: assessment of the learner, instructional task analysis, selection of instructional alternatives, prescription of suitable alternatives, instructional materials management, management of human resources, scheduling, and record-keeping.
EFFICIENCY FACTORS	In the role of the manager of instruction a single teacher can handle student-teacher ratios as high as 200:1 without sacrificing effectiveness of learning. Since teacher salaries constitute a major item in the educational budget, significant savings can be achieved through this strategy.

Time saved by the teacher can be used for improving the efficiency of instruction in such other ways as diagnosing student difficulties and prescribing appropriate remediation.

Differentiated staffing will enable us to efficiently utilize volunteer workers and paraprofessional teaching assistants. They can be assigned those tasks for which they are optimally qualified.

Teachers as managers do not have to be tied down to single classrooms. Teachers can be redeployed more equitably so that the large-enrollment first grades receive as much per-pupil teacher time as do the small-enrollment sixth grades.

Management and record-keeping tasks in an efficient classroom will significantly increase compared to those in a conventional classroom. Support from differentiated staffing is required to efficiently handle the record-keeping chores.

OPTIMAL CONDITIONS

Systematic training is provided to teachers, administrators, students, and other members of the new differentiated staff on their roles and functions.

There is administrative and community support for the new staffing patterns.

Sufficient people are available for the less-paying paraprofessional tasks.

CONTRAINDICATIONS

A large number of trained teacher are available.

There is strong resistance from teacher-training institutions and from teacher's unions toward differentiated staffing and the use of paraprofessionals.

Not enough supervisory personnel are available to maintain the new system.

Parental and community expectations require teachers to perform their traditional roles.

EFFECTIVE COMBINATIONS

Programmed learning and other instructional materials can be systematically designed to eliminate the need for the teacher to plan and present the instructional content.

Competency-based teacher training procedures can be used for the retraining of the teachers and other educational personnel.

REFERENCES

Nichols, D. G. No more schools? Saigon, Vietnam: Regional Center for Educational Innovation and Technology, 1973.

Thiagarajan, S. Personnel roles in new instructional systems. A paper prepared for the NIE Conference on Studies in Teaching. Bloomington, Indiana: Center for Innovation in Teaching, 1974.

19. LEARNING POSTS

SIMILAR STRATEGIES	Flexible facilities design and itinerant teachers.
DESCRIPTION	Learning posts are resource centers that provide additional instructional materials and services to isolated elementary schools in a region. The learning post may be located in a larger school, a house in the community, or in a special building. Instructional resources found in these learning posts may include reference books, library books, mediated instructional materials, tests and examinations, laboratory equipment, and special equipment for arts-and-crafts activities. Instructional services rendered at these posts may include administration and scoring of tests for certification, graduation, and diagnosis and prescription, remedial assistance to students who need it, progress checks for out-of-school students, demonstrations of laboratory experiments and arts-and-crafts activities, and guidance and counseling.
VARIATIONS	Learning posts may provide only a few selected services. They may cater to all elementary school students or only to out-of-school students. They may have a regular schedule or a flexible schedule at students' request. They may have a regular or volunteer staff.
SAMPLE APPLICATIONS	In Proyek PAMONG, nearly 500 learning posts are in operation. The learning-posts component of this project is being implemented extensively in Malang, East Java.
EFFICIENCY FACTORS	Many isolated rural schools do not have sufficiently large enrollments to warrant special instructional resources and services.

However, these resources and services are critical for effective primary education. By centralizing the services in learning posts we are able to significantly improve their educational efficiency.

A large number of children drop out of primary schools because of schedule conflicts. Learning posts may permit them to work at their own pace and to acquire basic skills and concepts.

OPTIMUM CONDITIONS

Isolated primary schools are located around a central area. The learning post is located in this city.

Convenient building for the learning post is available free of cost through community support.

Specialized materials and equipment are available at the learning center. Personnel are able to use them and to teach others how to use them.

There is a sufficient and regular demand for the facilities at the learning posts.

CONTRAINDICATIONS

Activities and materials at the learning posts are considered to be of a fringe nature by students and teachers.

Convenient transportation is not available from the rural schools to the learning posts.

Visits to the learning posts are not integrated with instruction in the classroom.

Competent professional staff is not available to manage and supervise the activities of the learning posts.

The schedule of the learning post is not convenient for the needs of the rural students.

EFFECTIVE COMBINATIONS

Learning centers may serve as the test center under a mastery-learning format. This will permit out-of-school students to take tests under supervision.

Volunteers and paraprofessional tutors may be stationed at the learning posts to provide remedial help to students who need it.

Learning posts may produce locally-relevant instructional material using the systematic instructional design process.

Itinerant teachers may spend part of their time at the learning post and the other part traveling to the elementary schools in the region.

REFERENCES

International Development Research Centre. Teaching yourself in primary school: report of a seminar on self-instructional programs. Ottawa, Canada: IDRC, 1981.

Nichols, D. G. Low cost learning systems. Los Altos, California: Institute for International Research Inc., 1980.

20. LEARNING TEAMS

SIMILAR STRATEGIES	Peer-group learning, Peer tutoring ,instructional games, frame games, simulations and roleplay, and TGT.
DESCRIPTION	This strategy involves an application of the psychology of small groups to mutual teaching and learning among students. Primarily, students are divided into heterogeneous groups based on their ability levels and sociometric preferences. The team learns together most of the time, using specially designed instructional materials and methods. Each member is responsible for the total instructional progress of the entire team. If individual members perform below the minimum acceptable standard on module tests, the other members of the team are responsible to provide remedial help to bring the student to the required level of mastery.
VARIATIONS	An element of competition across the learning teams may be introduced. The use of learning teams may be limited to specific areas of the curriculum. The size and the composition of the groups may vary to suit local needs.
SAMPLE APPLICATION	Learning teams are used in the IEL project. In the first three grades, these teams work together in review and practice sessions. In the last three grades, these teams work through the programmed instructional modules.
EFFICIENCY FACTORS	By making teams responsible for mutual learning, the role of the teacher is changed to that of a manager. This enables a single teacher to handle a larger number of students.

	Learning teams force faster learners to assist their slower peers to master the instructional objectives. This process makes use of a valuable resource in the classroom. Research data suggest that both the faster and slower learners benefit from participation in learning teams. Learning teams can share the same modules and thus reduce the recurrent cost of instructional materials.
OPTIMUM CONDITIONS	Cooperative behavior is supported by the local cultural norms Instructional materials specially designed for small-group use are available Students are able to function in a fairly independent manner. Space and facilities are available for small-group work.
CONTRAINDICATIONS	Students are too young and too dependent on the teacher to function as independent learners. There is parental resistance toward the use of their "smarter" children to help "dumber" peers. Classroom space is limited. Small-groups cannot function effectively without disrupting each other. Instructional materials are not available. Whatever materials are available do not lend themselves to small-group use. The group does not have interactive skills required for collaborative learning.

EFFECTIVE COMBINATIONS

Materials that are designed for small-group use are appropriate for use by learning teams. These include instructional games, framegames, simulation and roleplays, and group programs.

TGT takes the concept of learning teams to another level of participation and interaction. Small group learning is an efficient change of pace for such noninteractive larger group activities as programmed teaching and individual activities as learning from programmed instructional modules and mastery learning.

REFERENCES

Thiagarajan, S. Designing instruction for collaborative learning. Bloomington, Indiana: Instructional Alternatives, 1979.

Thiagarajan, S. Learning teams. Bloomington, Indiana: Instructional Alternatives, 1979.

21. MASTERY LEARNING

SIMILAR STRATEGIES	Competency-based teacher training, programmed learning, programmed teaching, and programmed tutoring.
DESCRIPTION	Mastery learning is an instructional management technique which applies the concept of formative evaluation to student learning. In this strategy, students are provided with specific instructional objectives. They are tested at frequent intervals and are given immediate feedback on the instructional objectives on which they have not yet attained acceptable standards of mastery. The student studies the original instructional materials or new ones. He then takes the same test in an equivalent version. This process is repeated until specified criteria are attained.
VARIATIONS	Mastery learning strategies may be applied to just a few selected areas in the curriculum. Groups of students (rather than individuals) may be required to demonstrate mastery of the instructional objectives before proceeding to the next unit of instruction. This enables us to reduce the variance in the pace of instructional progress.
SAMPLE APPLICATIONS	Project IMPACT and all of the related projects use mastery learning in one form or another.
EFFICIENCY FACTORS	The primary instructional responsibility is shifted from the teacher to the students. The teacher's role becomes one of management and this shift enables a single teacher to handle large numbers of students.

More able students master the instructional objectives at their own accelerated pace. They can finish the entire curriculum at a faster rate and become available for working through the next grade level or for assisting the teacher in record-keeping and tutoring functions.

Since this format permits different students to work at different schedules, it is not necessary for all students to have individual copies of all instructional materials. This permits us to achieve significant savings in the cost of materials.

OPTIMUM CONDITIONS

The curriculum has been converted into a set of specific behavioral instructional objectives.

Criterion- and domain-referenced tests are available to frequently check the mastery of the learners. These tests are also available in a number of parallel forms for retesting.

Instructional materials that are keyed to the specific objectives are available.

A convenient system of keeping track of student progress has been established.

CONTRAINDICATIONS

The teacher is unable to maintain detailed records required for tracking individual progress of students.

Specific objectives, appropriate tests, and suitable instructional materials are not available.

Students do not have sufficient skills and maturity to be independent learners.

EFFECTIVE COMBINATIONS

Mastery learning has to be supported by criterion- and domain- referenced testing.

Mastery learning can be combined with such systematically designed instructional materials as programmed learning and adjunct programmed modules.

Mastery learning can be combined with any form of programmed instruction such as programmed teaching and programmed tutoring.

Volunteers and paraprofessionals may be involved in administering and scoring criterion tests and assisting the teacher in maintaining records of individual student progress.

REFERENCES

Block, J. H. (Ed.) Mastery learning: theory and practice. New York: Holt, Rinehart and Winston, 1974.

Okey, J., & Ciesla, J. Teaching for mastery. Bloomington, Indiana: National Center for Development of Training Materials in Teacher Education, 1972.

22. MATERIALS MANAGEMENT

SIMILAR STRATEGIES	Flexible facilities design
DESCRIPTION	Many educational efficiency strategies require a shift from a labor-intensive approach to a materials-intensive approach. However, instructional materials may turn out to be a major recurrent cost item, especially in developing nations. A set of related strategies are available to reduce the recurrent costs associated with the use of instructional materials. Cost reduction through efficient printing and publishing include reducing the number of pages and using the optimum print size, printing technique, weight of paper, and binding. Cost reduction through efficient distribution requires a systematic master plan for procuring, packaging, and distributing the instructional materials. Cost reduction through sharing of instructional materials include the sharing of the same text by two or more students. Different students may work independently on different modules and thus permit a large number of students to use a significantly fewer number of modules. Cost reduction through increasing the life span of the materials include proper storage, modularization of the books to reduce their period of use, and theft and loss prevention.
SAMPLE APPLICATIONS	In the IEL Project, we have experimented with various printing techniques and have selected the most cost-effective approach. Instructional materials are packaged in strong wooden boxes with mothballs. Tilted on the side, these boxes double up as secure shelves with padlocks. Grouping arrangements of the project permit an entire class of up to 50 students to get by with just three copies of each programmed learning module (since different groups of students work through the modules in different sequences). The

	programmed teaching modules are bound in smaller sections so that the teacher uses each booklet a fewer number of times.
EFFICIENCY FACTORS	Sharing of books enables us to reduce the number of copies of each book to be procured. This reduces the cost of the materials. Systematic distribution of the instructional materials eliminates inefficiencies due to the unavailability of the required books on time. Prolonging the life of books reduces the annual recurrent cost of instructional materials.
OPTIMUM CONDITIONS	Instructional materials are to be produced from scratch and a variety of printing, publishing, and distributing options are locally available. Books can be purchased in large quantities and distributed to different schools. Books are lent or rented to students (rather than being sold to them). A centralized agency handles the distribution of instructional materials. Students do not take the books home, but only use it in schools during the instructional time.
CONTRAINDICATIONS	Students are required to buy their own textbooks. Textbooks are imported from developed nations. Textbooks are channelled through different publishers, distributors, and bookstores.

Publishers are reinforced for such instructionally irrelevant cosmetic factors as glossy paper and four-color illustrations.

EFFECTIVE COMBINATIONS

Volunteers and paraprofessionals may assist the teacher in materials management tasks.

Flexible facilities design can provide safe and secure storage for instructional materials.

Reference materials and library facilities can be centralized at learning posts or periodically circulated through the itinerant teacher.

REFERENCES

Nichols, D. G. IEL implementation handbook. Gbarnga, Liberia: The Improved Efficiency of Learning Project, 1982.

MacMakin, R. Consultant report on the IEL instructional materials production. Gbarnga, Liberia: The Improved Efficiency of Learning Project, 1980.

Thiagarajan, S. A report on the IEL mateials cost reduction project. Gbarnga, Liberia: The Imoroved Efficiency of Learning Project, 1983.

SIMILAR STRATEGIES: None

DESCRIPTION

Fourth generation microcomputers have been hailed as the next major revolution in educational technology with a global significance. The prices of the hardware have rapidly come down but the technology is in too much a state of flux to permit any stable predictions about its potential role in the efficiency of educational systems in developing nations. It is doubtful if sufficient numbers of microcomputers can be made available in remote rural classrooms to provide direct computer assisted instruction (CAI) to students.

In some urban areas in some develping nations, CAI can be used to provide very efficient and systematically designed drill practice in such basic skill areas as mathematics, reading, and languge. CAI can also provide tutorial instruction in a powerfully individualized branching mode and simulate science experiments in the primary school curriculum.

Perhaps the most immediate impact of microcomputers in the efficiency of educational systems in developing nations can be achieved through the use of various applications programs for centralized data collection, record keeping, and instructional design. For example, word processing software can help us produce instructional materials and to efficiently revise the text without having to retype the entire material. Electronic spreadsheets can help maintain student test records in a matrix form and to simulate various materials management approaches. Data base management software can keep track of a larger number of variables related to individual schools, teachers, and students and extract such specialized information as the number of teachers aides

across the region who have used programmed learning modules in more than one classroom with enrollments greaterthan 50.

VARIATIONS

A wide variety of microcomputer hardware, peripheral equipment and software is available. Microcomputers can be used for a variety of instructional and administrative purposes.

SAMPLE APPLICATIONS

Most CAI students have been conducted in industrialized nations. In Liberia, as part of the IEL Project, we have used three different microcomputers for a variety of purposes with mixed results. When the equipment was operative, word processing enabled us to efficiently and reliably produce numerous revisions of the programmed modules. We have also used electronic spreadsheets for budget and record-keeping purposes.

EFFICIENCY FACTORS

Powerful microcomputers are becoming very inexpensive.

Microcomputers are versatile tools. They can be used flexibly and efficiently to serve a number of functions.

Microcomputers can be used to keep large amounts of reliable records. These data can be rapidly retrieved and systematically analyzed for efficient planning and decision making.

Microcomputers can eliminate the need for a large pool of clerical staff.

OPTIMUM CONDITIONS

There is sufficient source of reliable electricity in the region.

Technicials are locally and readily available to install and service the microcomputers.

The microcomputer system has been carefully selected on the basis of present project software and memory needs.

People using the computer have been carefully selected and trained.

The microcomputers are fully utilized to perform a wide variety of services.

CONTRAINDICATIONS

Significant downtime of the microcomputer system can result from the nonavailability of electricity, of technicians, of spare parts, of peripheral equipment, and of software.

The microcomputer has been purchased hastily and the peripheral equipment and software are not compatible with the system.

Too few trained personnel are available for using the equipment. Too many untrained people use the equipment without the necessary knowledge and skills.

The microcomputer is underutilized and made to serve trivial functions.

There is strong resistance to the use of microcomputers in a developing nation whose economy forces it to be labor intensive.

EFFECTIVE COMBINATIONS

Microcomputers can be used to support materials management and record keeping chores of various elaborate educational systems.

Microcomputers can be used efficiently in the systematic instructional design process. For example, these computers can provide word processing capability for the production and revision of instructional text and data processing capabilities for evaluation.

Microcomputers can be made available in learning posts for CAI use on an experimental basis.

REFERENCES

Frederick, F. J. Guide to microcomputers. Washington, DC: Association for educational Communications and Technology, 1980.

Doerr, C. Microcomputers and the 3 R's: A guide for teachers. Rochelle Park, New Jersey: Hayden, 1971.

SIMILAR STRATEGY	Flexible scheduling.
DESCRIPTION	This scheduling strategy enables a teacher to provide more individualized attention to the students in a crowded classroom than in any other conventional instructional mode. It involves dividing the class into two, three, or four equal groups and directly dealing with one group for a portion of the class period. While the teacher attends to one group in this fashion, the other groups are engaged in some meaningful, self-contained activity.
VARIATIONS	To prevent teachers from getting bored, they may handle groups from different grade levels. While the teacher provides direct instruction to one group, the other groups may be monitored by older students, paraprofessionals, or volunteer helpers. The exact nature of the independent activities undertaken by the other groups may vary. In IEL, we use a variety of techniques including reteaching, dictation, writing practice, tracing and drawing, independent reading, answering math problems and reading comprehension questions, and instructional games.
SAMPLE APPLICATIONS	In IEL, children in the first grade are divided into three PT groups. During the first 20-minute session, the group receives direct instruction from the teacher. During the second 20-minute session, this group works on review activities that reinforce their mastery of the skills learned during the preceding session. The teacher now provides direct instruction to the second group. During the third 20-minute session, the first group works on basic skills practice and the second group reviews the skills taught in the preceding session. The teacher provides

direct instruction to the third group. This procedure is repeated throughout the entire school day.

In some IEL schools, we are currently experimenting with a two-group, two-session schedule of a similar nature.

EFFICIENCY FACTORS

This strategy enables the teacher to "batch process" a large classroom of students by dividing them into smaller groups. When combined with other suitable strategies, it enables us to increase the teacher-pupil ratio in the primary classrooms.

A single teacher can handle more than one grade level with this strategy. When the teacher provides direct instruction to one grade, the other grades can work on self-contained activities. Thus we can eliminate the need for one-to-one correspondence between the number of grade levels and the number of teachers.

Instructional materials for large-group presentations have to be either large (e.g., large posters or slides projected on large screens) or distributed to individual learners. With smaller groups (of up to 20 students), it is possible to use the chalkboard or standard textbook-sized visuals for group presentations. Similarly, the teacher does not have to raise her voice to be audible to all members of a large group.

Choral responding by groups of children increases the frequency of responses (which is highly correlated with learning efficiency) but permits slower and lazier students to hide in the anonymity of a larger group response. With a smaller group, the teacher is able to detect incorrect and tardy responses with greater reliability.

OPTIMUM CONDITIONS	Instructional materials and methods (e.g., worksheets and learning games) that are self-contained, relevant, and interesting are available to occupy the other groups while the teacher provides direct instruction to one group. Convenient space (e.g., learning kiosks in the Philippines, palaver huts in Liberia, or shady trees) are available for use by the other groups. Children are sufficiently capable of monitoring their own small-group or individual learning behavior. They have been trained to efficiently participate in self-contained instructional activities. Teachers are able to brief and debrief children about their independent learning activities and to monitor the other groups while providing direct instruction to one group.
CONTRAINDICATIONS	Classrooms are crowded, and different groups working on different activities may disrupt each other. Lack of relevant instructional materials that can be used independently by individuals or by small groups may result in disruptive behavior by bored or frustrated students. Teachers are required to repeat the same direct- instruction presentation to different groups, one after the other. Unless sufficient structure and support are provided for this activity, teachers may become bored and tired.
EFFECTIVE COMBINATIONS	Programmed teaching can be used in combination with this strategy. The programmed teacher can provide direct instruction to smaller groups of learners. Student tutors and volunteers and paraprofessionals can be used to instruct/monitor the other groups while the teacher works with one.

Instructional games, framegames, simulations, roleplays, and IGI provide motivating small-group activities which can be undertaken independent of the teacher by the other groups.

Programmed learning modules can be used as independent learning materials by the groups.

REFERENCE:

Nichols, D.G. IEL Implementation Handbook. Gbarnga, Liberia: Improved Efficiency of Learning Project, 1983.

25. PEER-GROUP LEARNING

SIMILAR STRATEGIES	Learning teams, and peer tutoring.
DESCRIPTION	Peer-group learning is a self-contained instructional format that enables a group of students to teach and learn from each other. This format is especially useful in achieving objectives at higher levels of cognitive learning and in the affective domain. Peer-group modules specify the procedures that the group is to use as they study a given text, answer questions, brainstorm, or discuss among themselves. They invariably require collaboration and interpersonal interaction. A special type of peer-group learning materials is called a grouprogram. This material permits leaderless discussions to take place within a prespecifid schedule towards a set of prespecified objectives.. A grouprogram provides the following elements: information, which is presented in a mediated form or elicited from the participants' experience and previous learning; the group task, a project that requires collaboration among the group members; feedback on the group's performance; and instructions to take care of logistics.
VARIATIONS	Peer-group learning materials may be mediated by printed materials, cassette tapes, radio or television. Group size may vary from at least three to as many as ten or more, depending on the objectives specified for the program. The length of time required to complete a program may vary from 15 minutes to a number of hours.

SAMPLE APPLICATIONS	Peer-group learning has been successfully used in Projects IMPACT and PAMONG. It is being tried out, with very promising results to date, in Projects PRIMER and IEL.
EFFICIENCY FACTORS	Peer-group learning enables the students to help each other learn and thus provides one of the best forms of individualized instruction. Peer-group learning develops important social and interpersonal skills which are often lacking in the atmosphere of solitary confinement imposed by most programmed instructional materials designed for self-instruction and individual study. Peer-group learning promotes cooperation, collaborative efforts, and a sense of responsibility for the learning of the members of the group. Experience in Project IMPACT has shown that learning progress improved when the students started to study in peer groups.
OPTIMUM CONDITIONS	Students read well enough to follow instructions and to learn in a non-teacher situation. The use of peer group learning is acceptable to teachers and parents. Time, personnel, and funds are available to develop materials guides for peer-group learning. Students are old enough to function independently as peer groups.
CONTRAINDICATIONS	Students are non-readers or very slow readers. Students are too young to function as learning groups without supervision by the teacher. This is particularly true of students in the first two grades.

EFFECTIVE COMBINATIONS

Peer-group learning has been found to be very effective when combined with programmed learning in the upper primary grades.

Peer-group learning is useful for enrichment activities and for experimentation in science.

Peer-group learning can be effectively combined with educational radio or educational television.

REFERENCES

Nichols, D. G. Low cost learning systems. Los Altos, California: Institute for International Research Inc., 1980.

Thiagarajan, S. Grouprograms. Englewood Cliffs, New Jersey: Educational Technology Publications, 1978.

Olmstead, J. A. Small-group instruction. Alexandria, Virginia: HumRRO, 1966.

26. PERFORMANCE AIDS

SIMILAR STRATEGIES	X Sheets, tutoraids, programmed teaching, and programmed tutoring.
DESCRIPTION	A performance aid is a reference material (e.g., checklist, glossary, flowchart, and decision table) which is designed to be used during the performance of a task. This device condenses and organizes how-to and when-to information for on-the-job use. Performance aids are not training devices, but they assume that certain levels of training have already taken place and the user possesses specific skills and discrimination.
VARIATIONS	A performance aid may take a variety of formats: Recipes, illustrated instruction, troubleshooting guides, printed instructions, reference tables, and worksheets.
SAMPLE APPLICATIONS	In the IEL project, a number of forms and worksheets enable a classroom teacher to enter checkmarks for items missed on the module test by individual learners. A worksheet is then used to convert these checkmarks into individual scores and to easily compute the mean and the standard deviation for the group. The teachers are not trained on the traditional computational process, but they are able to derive these statistics and to utilize them. In programmed teaching, well-designed performance aids reduce the need for teacher training. Untrained and nonprofessional teachers are able to perform reliably and effectively through the use of these performance aids.

EFFICIENCY FACTORS

Performance aids reduce the need for excessive training and thus save on the training costs and time.

Performance aids reduce the number of errors in critical areas. For example, in science experiments, they may reduc. hazardous accidents.

A well designed performance aid allows the task to be performed by a person with fewer skills and less knowledge. This enables us to economize on personnel costs.

Performance aids increase the speed of performance by reducing the need for unnecessary decision making.

OPTIMUM CONDITIONS

The tasks to be guided by the performance aid are critical, lengthy, and complex. For example, the computation of test statistics after an examination can be simplified through the use of various checklists.

A high degree of validity and reliability are required. For example, answer keys to module tes simplify the teacher's task while imp ving the reliability of scoring.

The performers do not have the necessary information, knowledge, experience, and skills to make independent decisions. For example, a flowchart used for prompting a student can enable a student-tutor to use a sophisticated and effective technique.

CONTRAINDICATIONS

Recall of necessary information and its application are required. For example, the student will not be permitted to use a dictionary or any other performance aid during the final examination.

The use of a performance aid may slow down the performance.

The use of a performance aid may reduce the credibility of the performer.

EFFECTIVE COMBINATIONS

Competency-based training should provide the prerequisite skills, knowledge, and discriminations to the people who are to use the performance aids. This prior training can be provided through different types of instructional materials.

REFERENCES

Horabin, I. & Lewis, B. Algorithms. Englewood Cliffs, New Jersey: Educational Technology Publications, 1978.

Lineberry, C. S., & Bullock, D. S. Job aids. Englewood Cliffs, New Jersey: Educational Technology Publications, 1978.

Bailey, R. W. Human performance engineering: A guide for system designers. Englewood Cliffs, New Jersey: Prentice-Hall, 1982.

27. PERSONALIZED SYSTEM OF INSTRUCTION

SIMILAR STRATEGIES	Mastery learning and peer tutoring.
DESCRIPTION	Personalized system of instruction (also known as the Keller Plan) uses a set of clearly defined instructional objectives which are arranged into convenient learning units. Each objective is keyed to specific pages of one or more textbooks and to other instructional materials. Students work individually through these objectives either by using the instructional materials or by being tutored by some other learner who has successfully completed the unit earlier. Whenever learners feel that they have mastered the objectives for the unit, they report to a proctor (an advanced student) to take the unit test. The proctors administer and score a criterion-referenced test. If the learner is successful, he is ready for the next unit and becomes a tutor/proctor for this unit. If the learner fails the test, he returns to the same unit for additional learning.
VARIATIONS	Instead of using a criterion test, the proctor may orally quiz and interview the students to determine if they are ready for the next unit.
SAMPLE APPLICATIONS	Alexander Romiszowski (1982) recently conducted a study in Brazil as a part of the Bases for Access to the Segundo Grau--Mathematics Project. After comparing student- directed, traditional, independent-study, and PSI, Romiszowski came to the conclusion that the more prescriptive approach of PSI is more efficient than the student-directed and teacher-independent modes of course implementation.

EFFICIENCY FACTORS	PSI shifts the responsibility for learning from the teacher to the students. Thus a teacher is able to manage a larger group of students. PSI structures peer tutoring activities. Thus it taps into a major cost-effective instructional resource. Both the tutors and the students benefit from the instructional interactions. PSI enables students to proceed at their own pace. Faster learners are able to save time without having to wait for their slower peers to catch up with them.
OPTIMUM CONDITIONS	Students have sufficient independent learning and tutoring skills. A sequenced set of instructional objectives is available. If not, there is sufficient time, funds, and personnel resources to prepare such a set of objectives. One or more instructional materials are available which can be keyed to the set of instructional objectives. Flexible scheduling in the classroom permits students to work at varying paces, thus supplying enough proctors to assist others.
CONTRAINDICATIONS	There is parental resistance to tutoring. Some parents feel that only a teacher can provide high-quality education. Others feel that their "smart" children are exploited into teaching "dumber" children in the classroom. Lockstep scheduling does not permit students to progress at different rates.

EFFECTIVE COMBINATIONS

Students from upper primary grades may act as proctors and tutors. This approach combines PSI with cross-grade tutoring.

Adult volunteers and paraprofessionals may be used as proctors and tutors.

REFERENCES

Born, D. G. Instructor manual for development of a peronalized instruction course. Salt Lake City, Utah: University of Utah Center to Improve Learning and Instruction, 1970.

Sherman, J. G. (Ed.) Forty-one germinal papers: A selection of readings on the Keller Plan. Menlo Park, California: W. A. Benjamin, 1974.

Thiagarajan, S. Madras system revisited: A new structure for peer tutoring. Educational Technology, 1973, 13(8).

28. PROGRAMMED LEARNING

DESCRIPTION	Programmed learning is an instructional design format which involves non-teacher, module-mediated instruction. Learning content, tests, activities, and procedures are specified in the student's programmed learning module. PL modules are self-contained and self-instructional. They may be used by individual students for self study or by peer groups for group study.
SIMILAR STRATEGIES	Programmed Teaching, programmed tutoring, adjunct programs, instructional modules, and teacher-learning units.
VARIATIONS	Group size may vary from one to as many as ten or more. Programmed learning may be done in school or out of school.
SAMPLE APPLICATIONS	Programmed learning is used in Projects IMPACT, PAMONG, BANGLADESH/IMPACT, PRIMER, INSPIRE, and IEL in the upper primary/elementary grades.
EFFICIENCY FACTORS	Learning can be self paced or small group paced instead of proceeding in lockstep fashion for the whole class. This enables us to save instructional time in many cases. Only minimal intervention by the teacher is required. Student-teacher ratios can be increased to 100:1 or more without reducing learning effectiveness. Students may reenter the system anytime, without waiting for the start of the school year and without repeating material already mastered, even after extended absence due to

illness, seasonal work (planting, harvesting, etc.) or other similar reasons.

Teachers are relieved of the tasks of planning for and carrying out instruction. This gives them more time to more closely monitor and facilitate learning by individuals or groups.

OPTIMUM CONDITIONS

Students possess a level of reading proficiency that enables them to "read to learn."

Student-teacher ratios are greater than 30:1.

Appropriate PL materials are available or, funds, time, and personnel are available to design and develop PL materials.

Untrained and undertrained teachers need upgrading in both knowledge of subject matter and teaching performance in the shortest possible time with the least expense.

These teachers can study the PL modules themselves before giving them to the children and stay at least a few steps ahead of their students.

Independent learning and the development of higher level cognitive skills are desired.

Students are highly motivated to complete curriculum requirements in the shortest possible time, as in the case of overaged learners and exceptionally gifted learners.

CONTRAINDICATIONS

Parental resistance toward non-conventional modes of learning is strong.

Students are either non-readers or very slow readers.

Programmed learning may be done by individuals in a self-instructional mode or by a learning team.

EFFECTIVE COMBINATIONS

Programmed teaching in the lower primary grades and programmed learning in the upper grades has been found to be a very effective and efficient combination in Projects IMPACT, PAMONG, INSPIRE, PRIMER, AND IEL.

Organizing students into learning teams or peer groups in programmed lerning reduces the chances of boredom setting in. this also helps in accelerating the progress of the slower learners as the team members teach and help each other learn. It further promotes the spirit of collaboration and increases group concern for the progress of each member of the team.

Itinerant teaching can be used to supplement programmed learning in the areas of home arts, applied skills, and co-curricular activities, if these are required by the school system.

Mastery learning is essential in programmed learning, particularly in skill subjects like mathematics and language. It is important to have a built-in system that will enable the students to review portions of the instructional material that teach the skills they have not mastered (as revealed by posttest results). They can then take the posttest a second time or, better still, an equivalent form of the test to determine whether they have mastered critical enabling skills before proceeding to lessons that teach more complex skills.

Combining the token management system with programmed learning provides very effective incentives for the group or the individual to complete the PL modules at a faster pace. Mastery learning strategies will prevent the students from proceeding at too fast a rate as to adversely affect learning and retention.

REFERENCES

Markle, S. M. Good frames and bad: A grammar of frame writing. New York: John Wiley and Sons, 1969.

Pasigna, A. L. Manual for curriculum writers: project Impact replication manual, Cebu City, Philippines: Project IMPACT, 1979.

Thiagarajan, S. Programme sur le processus de programmation. Montreal, Quebec: Lidec, Inc., 1971.

SIMILAR STRATEGIES	Programmed tutoring and tutoraids.
DESCRIPTION	Programmed teaching is a special form of programmed learning in which instruction is mediated by a nonspecialist "teacher." Both the content and the method are controlled by PT modules. The content is presented in the form of scripts for the teacher to read , pictures to show, words and sentences to copy on the blackboard, and the questions to ask. The method specifies what type of question to ask, how to distribute the questions, what signal to use to elicit responses, how to determine if the response is acceptable, how to provide corrections if the response is not acceptable, and what to do when the correct response is given.
VARIATIONS	The type of programmed teachers may vary: In Project IMPACT, sixth-grade students serve as the programmed teachers for the first grade. In IEL, untrained and undertrained teachers are involved. Response-group size may vary: In Project IMPACT, individual students are required to respond. In IEL, small groups of children (usually a third of the class, but always less than 20) are required to respond chorally. In Bangladesh/IMPACT, the entire class is required to respond.
SAMPLE APPLICATIONS	Programmed teaching is used in Projects IMPACT, PAMONG, BANGLADESH/IMPACT, and IEL in the first two grades in all core subject areas.
EFFICIENCY FACTORS	The need for teacher decision making is significantly reduced. Therefore, PT teachers can be recruited from untrained and undertrained teachers, paraprofessionals,

volunteers from the community, and high school or higher-grade students. This strategy permits significant savings (of time and money) in teacher training.

The design and development of PT modules require time and money. This is a significant (but non-recurrent) cost item.

Instruction is efficient and effective. Students are kept actively and meaningfully responding at rates that are 20 to 50 times the usual rate.

OPTIMUM CONDITIONS

Instructional objectives involve basic skills and knowledge.

A sufficient pool of people is available from which to recruit programmed teachers.

The teaching peformance of untrained and undertrained teachers has to be upgraded in a short period of time.

Funds, time, and personnel are available for the design and development of PT materials.

CONTRAINDICATIONS

Complex, higher level instructional objectives (which require careful processing of student responses to decide whether they are acceptable) are involved.

Trained teachers are available; these teachers resist being programmed.

There is strong resistance from teacher's unions and teacher training institutions toward the use of paraprofessionals.

There is strong parental resistance toward instruction by people who are perceived to be less than qualified.

EFFECTIVE COMBINATIONS

Volunteers and paraprofessionals may be recruited as programmed teachers.

Multigroup scheduling can be used to enable the programmed teacher to divide a large-enrollment classroom into more manageable smaller groups.

REFERENCES

Becker, W.C. Teaching reading and language to the disadvantaged--What we have learned from field research. Harvard Educational Review, 47 (4), 1977.

Thiagarajan, S. Humans rediscovered: No, there won't be a teacher shortage in the year 2000. In J. G. Sherman (Ed.) Forty-one germinal papers: A selection of readings on the Keller Plan. Menlo Park, California: W. A. Benjamin, 1974.

Englemann, S. Direct instruction. Englewood Cliffs, New Jersey: Educational Technology Publications, 1980.

Pasigna, A. L. A curriculum writer's guide. Manila, Philippines: INNOTECH, 1979.

30. PROGRAMMED TUTORING

SIMILAR STRATEGIES	Tutoraids, student tutoring, programmed teaching.
DESCRIPTION	Programmed tutoring is programmed instruction by paraprofessionals. The tutor closely follows a program, taking care not to deviate from the content and procedures specified in that program. Tutorials are carried out on a one-to-one basis for remediation purposes. No attempt is made to teach new content or skills. Diagnoses of student difficulties and tutorial assignments are decided by the teacher. A session lasts only a short period of about 15 minutes. Tutors maintain a progress chart and submit it to the classroom at the end of each session.
VARIATIONS	Programmed tutoring can be done by older students instead of by paraprofessionals. Programmed tutoring can be done by parents or older brothers and sisters at home. Programmed tutoring can be done with two students at a time instead of with individual students.
SAMPLE APPLICATIONS	Programmed tutoring has been successfully used in many places in the U.S. to provide remediation to elementary school students with reading difficulties.
EFFICIENCY FACTORS	The use of paraprofessionals for programmed tutoring is relatively inexpensive. Utilization of programmed tutoring by paraprofessionals frees the teachers from routine but time-consuming tasks and gives them more time for other important tasks that require more specialized professional skills.

Programmed tutoring permits a high degree of individualized attention which is extremely difficult to attain in a class being handled by a single teacher.

Students tend to respond more favorably to interactions with a new person in a different setting during the tutorial sessions.

OPTIMUM CONDITIONS

Competent paraprofessionals are available and willing to serve as tutors on a fairly regular basis for a nominal fee.

Time, personnel, and funds are available for preparing programmed tutoring materials.

Suitable space and facilities are available for the tutoring sessions. Programmed tutoring sessions are regularly scheduled.

CONTRAINDICATIONS

Competent paraprofessionals are not locally available to serve as tutors.

Students and parents object to the use of paraprofessionals as tutors.

EFFECTIVE COMBINATIONS

Programmed tutoring provides effective support to programmed teaching. The same instructional material may be used for both teaching and tutoring.

Programmed tutoring combined with programmed learning is very effective particularly with students who are absent for extended periods.

Programmed tutoring can make very efficient use of tutorials in teaching procedural skills.

REFERENCES

Ellson, D. G. Tutoring. In N. Gage (Ed.) The psychology of teaching methods. Chicago, Illinois: National Society for the Study of Education, 1976.

Thiagarajan, S. Programming tutorial behavior: Another application of the programming process. Improving Human Performance Quarterly, 1972, 1(2).

Von Harrison, G. and Guymion, R. Structured tutoring. Englewood Cliffs, New Jersey: Educational Technology Publications, 1980.

31. REMEDIATION AND ENRICHMENT

SIMILAR STRATEGIES	Use of volunteers and paraprofessionals, community involvement, student tutoring, and programmed tutoring.
DESCRIPTION	Remediation and enrichment strategies enable the teacher to meet the needs of exceptionally slow or fast students. These strategies involve taking students from the main stream of learning and providing them with specialized instruction. The purpose of this specialized instruction is to bring the performance of slow learners up to the minimum acceptable standard and, in the case of the gifted learners, to provide them with more challenging material to maintain their level of interest and further develop their skills. When learners do not attain the objective for a given module, they are provided remedial help to bring them up to the acceptable levels. The degree and type of remediation, which is decided by the teacher or the instructional supervisor may range from peer tutoring to intensive tutoring by the teacher. Similarly, learners who complete the modules at a much faster rate may be given enrichment activities or advanced modules to work on.
VARIATIONS	Tutorials and enrichment activities can be carried out in school or at home. Tutoring can be done by peers, older students, parents, older brothers and sisters, and other community volunteers. Enrichment activities may be in the form of studying enrichment or advanced modules, reading books and other references in the library, solving puzzles, and playing instructional games.

SAMPLE APPLICATIONS	Remediation and enrichment activities are provided in Projects IMPACT, PAMONG, and IEL in the form of tutorials and enrichment modules.
EFFICIENCY FACTORS	Tutorials and other remediation activities enable slow learners to get help in specific problem areas and to attain the acceptable level of performance for a given instructional objective without taking them out of their classroom group. Tutoring and other remediation activities enable the slow learners to catch up with the other members of the group. Tutoring has been shown to be beneficial to both the student and to the tutor particularly when the tutor is a peer or an older student. Making provision for enrichment and advanced modules enables the system to meet the faster learners' need for more challenging material without necessarily taking them out of their present classroom groups.
OPTIMUM CONDITIONS	Materials for tutoring and enrichment activities are available. Peers, older students, and other resources are available to tutor or to supervise enrichment activities.
CONTRAINDICATIONS	Existing materials cannot be used for remediation or enrichment purposes. Students are not willing to be tutored by other students or by non-professionals. Students are not willing to serve as tutors.

The class or school schedule does not leave enough time for remediation or enrichment activities.

EFFECTIVE COMBINATIONS

Remediation and enrichment activities are very effective when combined with the use of parents, paraprofessionals, and community volunteers.

Remediation and enrichment activities may be combined with the token economy system to encourage the faster learners and older students to serve as tutors.

Teaching-learning units can be combined with enrichment activities to enable faster learners to keep track of their own work and make periodic reports to the teacher.

REFERENCES

International Development Research Centre. Teaching yourself in primary school: Report of a seminar on self-instructional programs. Ottawa: IDRC, 1981.

Flores, P.V. Educational innovation in the Philippines: A case study of project Impact. Ottawa: International Development Research Centre, 1981.

Ellson, D.C. Tutoring. In Gage, N. (Ed.) The Psychology of Teaching Methods. Chicago, Illinois: NSSE, 1976.

SIMILAR STRATEGIES	Instructional games and framegames
DESCRIPTION	A simulation is an abstraction and representation of a larger system. The critical features of the larger system are identified and simplified. Many of the irrelevant or less important features are omitted from the representation in order to simplify learning about the system. Roleplays are also representations. The focus in simulations is on the fidelity of the stimulus; in roleplay, the fidelity of the response. For example, a simulation may be used for teaching how the slave trade took place during the last century while a roleplay may be used for teaching how it would feel to be a slave.
VARIATIONS	Simulations/roleplays may vary on such dimensions as the degree of fidelity to reality, time period, number of participants, and type of instructional objectives.
SAMPLE APPLICATIONS	While simulations and roleplays are used in various aspects of teaching, there is no major attempt at their systematic use in the elementary schools of developing nations.
EFFICIENCY FACTORS	Simulations are very effective in helping students master the complex interrelationships of a system or a process. Roleplays are equally effective in helping students appreciate various affective states. Most simulations and roleplays do not require elaborate equipment and materials. They are also usually inexpensive instructional strategies.

Simulations and roleplays require active participation of the students. Such participation makes learning more effective.

Simulations and roleplays present hazardous situations in a safer environment. For example, primary school children can learn about traffic hazards and fire safety in simulated activities.

OPTIMUM CONDITIONS

Simulations and roleplays are carefully integrated with other instructional activities.

The teacher prepares the students carefully before the simulation and debriefs the students after in order to identify and reinforce the key learning points.

Sufficient space and facilities are available for conducting the simulation/roleplay.

CONTRAINDICATIONS

Teachers and parents look down upon simulations and roleplay as make-believe activities which are not instructionally relevant.

The simulation is based on a biased and distorted version of the system it is supposed to represent.

The mechanics of the simulation/roleplay are so complex and cumbersome that the instructional message is lost.

EFFECTIVE COMBINATIONS

Simulations and roleplays can be combined with instructional games or framegames for greater motivational impact.

Volunteers and paraprofessionals can monitor simulations and roleplays and participate in it in adult roles.

Simulations and roleplays about classrooms are effective in competency-based teacher training.

REFERENCES

Thiagarajan, S. and Stolovitch, H. D. Instructional Simulation Games. Englewood Cliffs, New Jersey: Educational Technology Publications, 1978.

Greenblat, C. S. and Duke, R. D. Gaming-simulation: Rationale, design, and applications. New York: John Wiley, 1975.

33. STUDENT TUTORING

SIMILAR STRATEGIES	Tutoraids and programmed tutoring.
DESCRIPTION	Tutoring is a one-to-one instructional activity whose usual purpose is to provide remedial help to slower learners. In student tutoring, an advanced student tutors a slower one. Student tutoring may be in the form of peer tutoring in which the tutor is in the same grade. It may be in the form of cross-age or cross-grade tutoring in which the tutor is from a higher grade. The tutor may use the original textbook from which the student was taught earlier or some specially designed tutoring material. The tutoring session usually lasts only for a short period of time. It may be monitored by the classroom teacher.
VARIATIONS	Tutoring may involve a small group of students instead of an individual student. Tutoring may take place in school or at home.
SAMPLE APPLICATIONS	Peer, cross-age, and cross-grade tutoring in various combinations are used in Projects IMPACT and PAMONG.
EFFICIENCY FACTORS	Peer, cross-age, and cross-grade tutoring makes use of resources that are readily available to the school. Utilization of student tutoring frees teachers from many repetitive instructional tasks and gives them more time for other important responsibilities that demand their specialized professional skills.

Experience in Project IMPACT shows that young children often learn very effectively from those slightly older than themselves. Ideas are often explained more clearly to one student by another.

Experience shows that tutors also benefit from the tutoring activities in at least two ways: they gain self-confidence and acquire a better self-concept, and their mastery of the basic skills is improved as they attempt to reteach these skills to others.

The utilization of students to tutor others is a cost-saving strategy for maximizing learning because the tutors are not paid.

OPTIMUM CONDITIONS

A large number of students in the higher primary grades and in high schools are available to serve as tutors.

Student tutoring sessions are planned and implemented at the school level so that they do not conflict with other class and school schedules.

Time, personnel, and funds are available to prepare the programs needed by the tutors.

Student tutoring is supported by an effective, inexpensive incentives system so that students are motivated to serve as tutors.

CONTRAINDICATIONS

Administrators and teachers are not willing to take part in a student tutoring program of this type.

Students are not interested in serving as tutors.

Parents strongly object to having their children taught by other students. They also object to their children having to tutor other students.

EFFECTIVE COMBINATIONS

Student tutoring systems are combined with programmed teaching in Project IMPACT and PAMONG.

Student tutoring combined with programmed learning has also been found to be effective in Project IMPACT and PAMONG.

Student tutoring can be effectively combined with peer- group learning and personalized system of instruction (PSI).

REFERENCES

Endsley, W. R. Peer tutorial instruction. Englewood Cliffs, N.J.: Educational Technology Publications, Inc., 1980.

Nichols, D. G. Low cost learning systems. Los Altos, California: Institute for International Research Inc., 1980.

Thiagarajan, S. Tutoraids. Englewood Cliffs, N.J.: Educational Technology Publications, Inc., 1978.

SIMILAR STRATEGIES	Competency-based teacher education.
DESCRIPTION	This strategy involves an application of the systems approach to the instructional materials development. Most models that govern this activity have the stages of analysis, design, evaluation, and implementation. During the analysis stage, the needs, the learners, and the instructional task are analyzed to derive a rational set of instructional objectives and specifications for the instructional system. During the design stage, appropriate instructional media and formats are selected and a prototype version of the materials is produced. During the evaluation stage, the material is repeatedly reviewed by specialists and tried out with learners. They are revised on the basis of the feedback to improve their instructional and motivational effectiveness. During the implementation stage, the materials and methods are implemented in the educational system. Most recent approaches to systematic instructional design permit a flexible and overlapping progression through these four stages. The outcomes of the process is a set of instructional materials that are based on specific instructional objectives that have been improved and proved through repeated student testing.
VARIATIONS	Systematic instructional design may involve different media (e.g., print, radio, and television) and modes (e.g., programmed instruction, small-group learning materials, and information mapping) Systematic instructional development may be undertaken in stages. For example, materials for the first two grades may be developed and implemented before materials for the upper grades are developed.

Systematic instructional development can begin from different bases. In the IEL Project, for example, we began with the curriculum as our starting point. In Bangladesh local textbooks were already available and we began our instructional development with them.

SAMPLE APPLICATIONS

Systematic instructional development has been a key factor in Project IMPACT and its successors. In IEL, for example, more than 500 instructional modules have been developed through an application of this process.

EFFICIENCY FACTORS

Various efficiency factors can be built into the instructional design of the materials. They can be developed to eliminate all trivial and redundant instruction.

Systematically developed instructional materials incorporate powerful principles from learning theory and instructional psychology in the sequence and structure of the materials. This removes the need for the teacher to make important instructional decisions.

With systematically developed instructional materials, we may use unqualified and underqualified adults to manage a classroom. Thus we can mobilize a large number of inexpensive human resources.

OPTIMUM CONDITIONS

A national curriculum is available as the starting point for the systematic instructional design.

Competent personnel resources are available to analyze, design, develop, revise, and implement instructional materials.

Experts in the subject-matter areas and in language are locally available to review and revise prototype materials.

Facilities are available for typing, artwork, layouts, printing, and publishing of the materials.

CONTRAINDICATIONS

Textbooks and other instructional materials are locally available in great variety.

Trained (or trainable) personnel are not available for undertaking systematic instructional design.

Local printing and publishing facilities are not available. Funds and time are not availble for the significant initial investments required for this activity.

The local curriculum is in a state of rapid flux. Constant and expensive updating and revising of the instructional materials are needed.

Sufficient funds and personnel are not available for systematically implementing the instructional materials. The materials stay on shelves.

EFFECTIVE COMBINATIONS

Systematic instructional development may be applied to any type of instructional material. For example, it can be applied to the production of programmed learning materials, practical arts manuals, and instructional games.

The development of instructional materials should be supported by competency based teacher training and by materials management.

REFERENCES

Gagne, R. M. & Briggs, L. J. Principles of instructional design. New York: Holt, Rinehart & Winston, 1974.

Langdon, D. G. The Instructional Design Library. (40 volumes) Englewood Cliffs, New Jersey: Educational Technology Publications, 1978.

Romiszowski, A. J. Designing instructional systems: decision making in course planning and curriculum design. New York: Nichols Publishing, 1981.

35. T-G-T: TEAMS-GAMES-TOURNAMENT

SIMILAR STRATEGIES	Framegames and learning teams.
DESCRIPTION	Students in a classroom are divided into heterogeneous four-member teams. Each team contains students with high, medium, and low academic abilities who remain as teammates throughout the school year. Each team has two practice game sessions during each week in which they play an instructional game related to the skills and concepts they have recently learned in class. Higher ability students help their lower-ability teammates during these practice sessions. A class tournament is held once a week. Members of the team do not compete as a team but as individual players. Each player is assigned to a table in which he or she competes against players from two other teams at the same ability level. The game score is converted into points which are shared by the members of the team. The winners and losers at each table move up and down respectively in their table assignments for next week's tournament . This procedure is replicated throughout the school year with new skills and concepts being incorporated in the games.
VARIATIONS	The frequency of practice games and tournaments can be changed to suit the school schedule. The types of instructional games can be changed. The games may deal with only a few selected subject-matter areas that require significant amounts of drill practice.
SAMPLE APPLICATIONS	Longitudinal research conducted by Johns Hopkins University in a variety of schools (in the U.S.) indicate significant learning gains among students at different ability levels.

EFFICIENCY FACTORS	The motivational effects of games and of intergroup competition encourage students to learn efficiently. Intrateam cooperation permits efficient use of peer tutoring and mutual learning. A single teacher (or volunteer helpers) can monitor a large number of students participating in T-G-T practice games and tournaments.
OPTIMUM CONDITIONS	Effective instructional games which are correlated to skills and concepts being taugnt are available. The classroom teacher updates these games to suit newer skills and concepts being taught. Students are taught to play the games efficiently. The games are simple enough to be played by the students. Sufficient space and facilities are available for conducting the practice games and tournaments. Higher ability team members teach their slower teammates efficiently. Suitable instructional materials are available for this purpose. The teacher keeps track of the results and publicizes them.
CONTRAINDICATIONS	Local norms look down upon games and competition as being too frivolous to be instructionally effective. Excessive competition encourages students to win at all costs and to lose sight of the instructional objectives. There is insufficient adult supervision of the tournaments.

EFFECTIVE COMBINATIONS

Instructional games and framegames can be incorporated into this strategy.

Instead of using games, student scores on criterion-and domain-referenced tests can be used for awarding points for teams.

T-G-T teams can also use the learning-teams approach.

REFERENCES

DeVries, D. L. & Edwards, K. J. Using Teams-Games-Tournaments in the classroom. Baltimore, Maryland: Center for Social Organization of Schools, Johns Hopkins University, 1973.

DeVries, D. L. Teams-Games-Tournament: The team learning approach. Englewood Cliffs, New Jersey: Educational Technology Publications, 1980.

SIMILAR STRATEGIES	Programmed learning, adjunct programming, mastery learning, and criterion-referenced assessment.
DESCRIPTION	The teaching-learning unit (TLU) is a key component of Project PLAN which is suited for flexible use in developing nations. The strategy involves modularizing the curriculum and presenting TLU sheets to individual students. Each TLU contains a statement of the instructional objective (in terms that the student can understand), a sample test item for self testing, a series of suggested learning activities, a list of key words, and a list of specific resources. Students check themselves on the sample test item, and if successful, report to the teacher for credit. Otherwise they work through the various suggested activities, using the listed resources. When they have completed their task, they test themselves and report to the teacher for the posttest and credit.
VARIATIONS	TLU's can be initiated in selected subject areas for short periods of time. A more comprehensive system can be gradually developed through a period of number of years. TLU's can be specific to a one set of instructional materials rather than using a wide variety of materials and activities. For example, students may work through a programmed learning module under a TLU format.
SAMPLE APPLICATIONS	Project PLAN has been tried out in a few developing nations. Various forms of TLU (labeled as student contracts and individualized instruction) have also been tried out in developing nations.

EFFICIENCY FACTORS	TLU shifts the responsibility for learning to the student and thus enables the teacher to monitor and manage a large number of students. TLU enables us to provide more individualized instruction using available resources. Time required for instructional development under this strategy is shorter than the time required for developing more comprehensive instructional systems. Considerable time is saved by allowing more able students to move at their own pace and master the instructional objectives faster than the less able students.
OPTIMUM CONDITIONS	Students have sufficient independent learning skills (usually in the upper primary grades). A continuum of instructional objectives and sample test items are available. If not, sufficient funds, time, and competent personnel are available to prepare such a continuum. Materials and space are available for students to work independently on their TLU's.
CONTRAINDICATIONS	Students do not have independent learning skills (usually in the first two grades). Instructional objectives, test items, and instructional materials are not available to support the TLU. Parents and the community are not ready to accept independent learning as a viable alternative to instruction by a teacher.
EFFECTIVE COMBINATIONS	TLU's may be combined with programmed learning materials and adjunct programming. They utilize criterion- referenced assessment.

Student tutoring (and tutoring by paraprofessionals and volunteer aides) can be combined with TLU's. The tutors may become another optional resource along with independent activities.

Learning teams can be used to reduce the problems associated with independent learning. Members of the team can be responsible for the progress of each other through TLU's.

Annual scheduling with provisions for catch-up and remediation strategies can be used to ensure that the less-able students are not left behind.

The token economy system may be combined with TLU to motivate students toward efficient and effective independent learning.

REFERENCES

Rahmlow, H. F. The teaching-learning unit. Englewood Cliffs, New Jersey: Educational Technology Publications, 1978.

Flanagan, J. C., Shanner, W. M., Brudner, H. J., and Market, R. W. An individualized instructional system: PLAN. In H. Talmage (Ed.) Systems of Individualized Education. Berkley, California: McCutchan Publishing Corporation, 1975.

37. TOKEN ECONOMY SYSTEM

SIMILAR STRATEGY	Mastery learning.
DESCRIPTION	This behavior-modification technique reduces disciplinary and disruptive behaviors in the classroom by reinforcing acceptable, task-oriented behaviors. Students are given tokens (points or chips) for clearly-targeted good behavior (attendance, punctuality, preparedness, responsiveness, cooperativeness, involvement in work, and quality and quantity of academic performance). These tokens may be used to purchase various rewards (school supplies, trinkets, toys, letter grades, trophies and certificates, and participation in special events). General target behaviors are defined for the entire class (e.g., arrive in class before eight o'clock; bring homework to class; bring pencil, copybook, and book to class; remain seated; and pick up trash around your seat). Specific task-oriented task behaviors (e.g., how many homework items to complete) may be adjusted to suit individual students' entry skills. At a later time, students may be encouraged to participate in the collaborative identification of desirable target behaviors.
VARIATIONS	Points may be used instead of tokens. Rewards may be limited to social recognition rather than to material goods. Tokens and points may be limited to just academic performance and test scores.
SAMPLE APPLICATIONS	The token economy system has been used in many U.S. educational institutions, especially with disruptive primary school children, with significantly positive results. Application of this strategy in developing nations has been limited.

The point system has been used in the Naga, Cebu site of Project IMPACT using cards that are color-coded for different points. These cards can be used to purchase commodities at the rummage sale during the annual IMPACT festival.

EFFICIENCY FACTORS

A major factor that contributes to the inefficiency in the primary-grade classrooms of developing nations is perceived to be "discipline problems." By reducing the incidence of these problems, the token economy system optimizes instructional time in the classrooms.

The token economy system can become a collaborative activity among the teacher, other adult helpers in the classroom, and the students. It thus relieves teacher time requirements for maintaining discipline in the classroom.

Maintaining the token economy system involves a number of academic skills. It becomes an integrative instructional activity in itself.

Time and funds are required to initiate and sustain a token economy system in the classroom.

OPTIMUM CONDITIONS

Students are able to understand and follow the rules involved in a token-economy system.

It is possible to identify a number of inexpensive material rewards and reinforcing activities that are inexpensive.

Community support of the strategy is available, along with contributions to the reward system.

The teacher and other adult helpers in the classroom are capable of maintaining a reliable and consistent system that is fair.

CONTRAINDICATIONS

There is resistance toward the materialistic and monetary aspects of the strategy.

Teachers and school administration prefer punitive approaches to maintaining discipline.

Different teachers handling the same students are unable to apply the same groundrules.

EFFECTIVE COMBINATIONS

Programmed learning may be used with the token economy system reinforcing increased task orientation and high posttest scores.

Student tutoring may be linked to a token economy system in which the tutors earn tokens for assisting other students.

Tokens may also be awarded to independent learning activities in the teaching-learning unit.

Tokens may be awarded on the basis of the performance of a small group in peer-group learning, learning teams, instructional games, framegames, and group-based activities.

REFERENCES

Wooten, J., Jansen, W., and Warren, M. K. Project Impact: a low-cost alternative for universal primary education in the Philippines. Washington, D.C.: U.S. Agency for International Development, 1982.

Lauridsen, D. The token economy system. Englewood Cliffs, New Jersey: Educational Technology Publications, 1978.

Martin, R. and Lauridsen, D. Developing student motivation and discipline: A series for inservice training. Champaign, Illinois: Research Press, 1974.

SIMILAR STRATEGIES	Performance aids and programmed tutoring.
DESCRIPTION	Tutoraids are self-contained instructional packages designed for individual tutoring by nonprofessional tutors. Each tutoraid deals with a single instructional objective. The learning materials for the student are divided into lessons (which deal with a single concept or skill), levels (which require responses at the same level of difficulty), and frames (which are individual items). The performance aids for the tutor are printed on a cue card. General instructions are printed on one side of this card. These instructions specify the materials, the beginning and ending procedures, the sequence of levels, and a suggested schedule. A prompting chart is printed on the other side of the cue card. This is a flowchart which explains how to administer each item of the tutoraid, what to do when the students give the correct answers, and how to prompt when the student gives an incorrect answer
VARIATIONS	Tutoraids deal with different types of objectives and are used with different types of students and tutors.
SAMPLE APPLICATION	Tutoraids have been used in a variety of training situations in the U.S. This particular instructional mode has not been used extensively in developing countries, but programmed tutoring, which shares many of its features has been tried out by Ellson in Malyasia.

EFFICIENCY FACTORS	Tutoraids provide structure for student tutoring and for tutoring by volunteers and paraprofessionals. These tutors can provide effective instruction at a fraction of the cost of professional educators. Tutoraids are fairly easy to design and develop. They require lesser expertise than other more complex instructional modes. Tutoraid lessons last for very short periods. They permit flexible scheduling. Tutoraids are not bulky. They can be sent home for use by parent tutors. Tutoraids can provide remedial instruction for slower learners without major recurrent costs.
OPTIMAL CONDITIONS	The skill taught in the tutoraid requires personal monitoring of student performance (e.g., oral reading and arts and crafts) to determine its acceptability. The skill taught in the tutoraid requires repeated practice for mastery. Sufficient number of motivated tutors are available who could follow the simple diections and make the necessary discriminations between a correct and an incorrect response.
CONTRAINDICATIONS	Enough space and physical facilities are not available for undisturbed tutoring sessions. Remedial periods are not regularly scheduled. Available tutors are either overqualified (and, therefore, do not want to follow the tight directions) or under- qualified (and, therefore, cannot follow the tight directions). Tutoraids have not been systematically and carefully designed and developed.

EFFECTIVE COMBINATIONS

Tutoraids can supplement programmed teaching and programmed learning modules.

Tutoraids can be incorporated into a mastery-learning format.

Tutoraids can provide effective follow-up to educational radio or television broadcasts.

Tutoraids can be used effectively by learning teams.

REFERENCES

Thiagarajan, S. Tutoraids. Englewood Cliffs, New Jersey: Educational Technology Publications, 1978.

Thiagarajan, S. Exceptional children, unexceptional grown-ups, and mediated resources. Audiovisual Instruction, 1973, 18(2).

SIMILAR STRATEGIES	Community involvement and programmed tutoring.
DESCRIPTION	Volunteers and paraprofessionals constitute an important resource that can be mobilized to carry out routine but necessary noninstructional tasks. They can serve as teacher's aides to maintain progress records. They can administer and score tests and record test results. They can also take care of the storage and retrieval of instructional materials. In some cases, they may be used as programmed tutors.
VARIATIONS	In the absence of volunteers and paraprofessionals, students can be trained to serve as teacher's aides, in shifts during the week, depending on the amount of work that needs to be done. A paraprofessional may be hired, for a nominal fee, to serve as teacher's aide for two or three classes.
SAMPLE APPLICATIONS	Volunteers and paraprofessionals have been successfully utilized as teacher's aides in Project IMPACT, and as programmed tutors in the U.S.
EFFICIENCY FACTORS	The use of volunteers and paraprofessionals to take care of test administration, record keeping, and other noninstructional tasks enables the teachers to devote more time for other more critical tasks which include direct instruction, diagnosis of student difficulties and making provision for appropriate remediation. Volunteers and paraprofessionals do not strain existing educational budgets.

	volunteers and paraprofessionals who are also parents, close relatives or neighbors of students can help track down absentees and thus increase the efficiency of classroom instruction.
OPTIMUM CONDITIONS	Paraprofessionals and other community members volunteer themselves to the school during the week to serve as teacher's aides, proctors, or programmed tutors. There are funds to make token payments to volunteers and paraprofessionals. The function of the teacher is redefined to manage and supervise instruction. The functions of various other roles are clearly specified.
CONTRAINDICATIONS	There is strong resistance from teachers, students and parents against volunteers and paraprofessionals serving as teacher's aides, proctors, or tutors. There are not enough volunteers/paraprofessionals to keep the system viable.
EFFECTIVE COMBINATIONS	Paraprofessionals and volunteers working with instructional supervisors make possible the optimal utilization of instructional time, the professional skills of the instructional teachers, and the time and services of the volunteer. Paraprofessionals and volunteers can be used to teach or demonstrate arts and crafts activities. An efficient training program is available to help paraprofessionals and volunteers to acquire competencies related to their roles and functions.

Suitable performance aids and instructional materials can support the work of volunteers and paraprofessionals.

REFERENCES

Flores, P. V. Educational innovation in the Philippines: a case study of project Impact. Ottawa, Canada: International Development Research Centre, 1981.

Nichols, D. G. Low cost learning systems. Los Altos, California: Institute for International Research Inc., 1980.

40. X SHEETS

SIMILAR STRATEGIES	Performance aids and applied skills manuals.
DESCRIPTION	X sheets contain step-by-step instructions for conducting science experiments in the elementary curriculum. Each sheet deals with a single key experiment which can be conducted in school or at home using inexpensive, everyday materials and simplified equipment that can be locally obtained or improvised. Directions for these experiments are addressed to the teacher in the lower grades and to the students in the upper grades. The sheets also contain appropriate instructions, blank tables, and debriefing questions to focus the student's attention to critical outcomes of the experiment.
VARIATIONS	The number and nature of experiments treated in these sheets may vary. The teacher may demonstrate the experiments or require the students to conduct them in small groups.
SAMPLE APPLICATIONS	In the IEL project, these experiment sheets are incorporated in the programmed learning modules.
EFFICIENCY FACTORS	Providing laboratory equipment in primary schools is an inefficient approach to encouraging experimentation in the science curriculum. Through the use of everyday materials and improvised equipment, these sheets reduce the cost and increase the relevance of this activity.

By providing detailed directions for each experiment, we reduce the amount of teacher training.

OPTIMUM CONDITIONS

Science is treated as a critical subject-matter area in the primary school curriculum.

Materials and equipment suggested in the sheets are locally available.

Separate time periods for science experiments are set aside in the regular schedule.

Learners are encouraged to conduct these experiments as a team and to replicate them at home.

Adult supervision is available for potentially hazardous or disruptive experiments.

CONTRAINDICATIONS

Teachers do not appreciate the value of experimentation in science.

The sheets require a high level of reading comprehension.

The experiments are complex and time consuming.

EFFECTIVE COMBINATIONS

Science experiments lend themselves to small-group activities.

Volunteers and paraprofessionals may demonstrate the experiments or supervise the students.

Experiments may be treated as an enrichment activity for faster students.

Experiments may be demonstrated through television broadcasts.

More elaborate laboratory equipment may be found in the learning posts.

REFERENCES

Unesco. Sourcebook of science experiments in developing nations. Paris: UNESCO, 1965.

Anokwuru, E., Tucker, W. H., et al. Programmed learning modules in science for grades 4-6. Gbarnga, Liberia: Improved Efficiency of Learning Project, 1983.

APPENDIX IX

SYSTEMS APPROACH MODEL

IIR'S SYSTEMS-APPROACH MODEL

The IIR model is applicable to the development of a variety of systems, including instructional/educational systems and management/administrative systems.

Our model has evolved over the last two decades of our field experience in providing technical assistance to developing nations. Our work has primarily been in education, and has been conducted in many developing nations of Asia, Africa, and Latin America. The geographic breadth of our experience is matched by the variety of systems we have developed: educational systems, management systems, examination systems, information systems, distribution systems, and personnel systems. The core of our model has evolved through our continuing work which has enabled us to improve each application based on our successes and occasional failures in the previous application. Further, the variety of national contexts and project goals has allowed us to build flexibility into the model. The evolution of our model has been significantly influenced by a comparative analysis of instructional/educational and management/administrative projects.

The success of a project depends not only on the quality of its basic design system but also on the way the system is implemented. In order to attain maximum cost-effectiveness for a current IIR project, for example, we have had to suitably reengineer the management/administrative system which supports an innovative instructional project. For example, in our current Liberian work (Improved Efficiency of Learning Project, AID-AFR 3604), in addition to establishing a comprehensive primary educational system, we also created improvements in the related systems for teacher training, teacher management, materials production, materials distribution, and school administration.

Without such a comprehensive redesign of the administrative systems, the Improved Efficiency of Learning Project would not have attained its goals with the current degree of cost-effectiveness. In many of our administrative/management projects, an effective training system has been essential for successful implementation. In other words, coordinated training and management are both essential for the success of any project.

Our model is based on the assumption that the improvement of instruction, productivity, efficiency, and cost-effectiveness of a system depends on a wide range of integrated instructional and management strategies. The model, which we describe below in its general form, is applicable to the design of educational/instructional as well as management/administrative systems. The types of analysis procedures, planning procedures, specific strategies, production requirements, evaluative criteria, implementation approaches, and other factors will differ depending on whether the project is primarily managerial or instructional. Outputs within each component also vary between these two major categories. Therefore, this particular unified

model for instructional and management systems design is very appropriate for this project.

A unique aspect of our systems-approach model is the integration of instruction and management. In addition, a major strength of the model is its eclectic nature. Based on a variety of other models, it incorporates elements of logical, rational approaches as well as intuitive, experiential ones. The model is tightly organized and its application is supported by detailed documentation and procedural guidelines. The model also incorporates some "loose" characteristics which permit on-the-spot modifications and intuitive improvisation in the field.

Another major element of this model is its empirical nature. Although we design various systems based on the best available state-of-the-art technology, everything recommended will immediately be tested in seed schools with sample staff groups and modified on the basis of formative feedback.

Before describing the model in detail, we would like to reemphasize two important aspects: (1) it is still an evolving, dynamic model; and (2) it is designed for flexible, creative application.

The three basic components of the IIR model, as discussed in the sections below, are: analysis and planning; design and production; and implementation and institutionalization. Superimposed on these are the two additional components of evaluation and revision and project management.

1. Analysis and Planning Activities

Inputs to the analysis and planning component will include various existing documents, interview and field observation data, problem and goal statements, and our knowledge of appropriate developmental strategies. Outputs of this component will include specification of the objectives and the requirements for appropriate instructional, training, management, or administrative systems. Activities in this component of the IIR model are listed in Table 1 on the following page (Analysis and Planning Activities). Key features of these activities are described following Table 1.

Table 1

ANALYSIS AND PLANNING ACTIVITIES

PRELIMINARY ANALYSIS	Analyze teacher-training. Analyze institutional resources and constraints. Identify targets of opportunity. Specify preliminary goals. Select suitable Educational Efficiency Strategies.
RECEIVING SYSTEM ANALYSIS	Analyze receiving system characteristics. Identify human resources. Analyze characteristics of actual and ideal graduates.
INSTITUTIONAL SYSTEMS ANALYSIS	Analyze physical facilities. Analyze social milieu. Analyze human resources. Analyze target population characteristics.
INSTRUCTIONAL ANALYSIS	Perform concept analysis. Perform skills analysis. Perform informational content analysis. Perform affect analysis.
MANAGEMENT SYSTEMS ANALYSIS	Analyze staffing patterns. Analyze staff functions. Analyze equipment and facilities. Analyze the use of materials and equipment. Analyze organization and management. Analyze classroom scheduling. Analyze budgets and financial management.

Preliminary analyses. These activities clarify initial assumptions of the project design. During this stage, we will work with our counterparts to verify the resources and constraints in the relevant systems and institutions and identify targets of opportunity for improved educational efficiency. We also specify the goals and outputs for the project component and identify potential instructional, evaluative, and managerial strategies.

Receiving system analysis. To ensure external efficiency of our work, our team will begin with an analysis of the larger system which receives the products and the graduates of specific subsystems and institutions. For example, the local rural community is the major receiving system for a vocational training system for income-generating skills. Similarly, the MOE financial management system is the receiving system for school managers completing training seminars related to improved financial management procedures.

Institutional system analysis. To ensure internal efficiency of our work, we will assist our counterparts with an analysis of the major subsystems involved in the project. This process will identify the social milieu and the physical facilities of different institutions and identify the characteristics that will be taken into account in developing an efficient educational training and administrative system. The types of resources and constraints identified in this step will include development costs, recurrent costs, scheduling limits, media facilities, and educational personnel.

A major activity in this stage will be an analysis of the target population, i.e., students, trainees, and personnel who will benefit from the innovations. For example, different types of primary school teacher trainees will be analyzed to identify those characteristics most likely to interact with the impact of the new curriculum and instructional system. These characteristics include the trainees' entry levels in various subject-matter areas, level of language, preference for different instructional formats, background experiences, and independent learning skills. As another example, in designing a computerized information management system, this analysis will identify such characteristics of MOE Planning Unit personnel as the following: familiarity with previous data, preference for different formats for data presentation (e.g., graphic, tabular, or narrative), knowledge of statistical concepts, computer-literacy, and attitude toward reliability of data.

Instructional analysis. This analysis is related to the curriculum that forms the basis for the design of any educational or training system. It is undertaken in two phases. In the first phase, we will work with our counterparts to review the existing curriculum and locally-available instructional materials. We will help with an analysis of the goals and the scope of the curriculum to derive the major instructional objectives and a hierarchical continuum for instruction. Based

on these analyses, we will assist with the selection of appropriate instructional strategies.

During the second phase, we will facilitate an analysis of the curriculum in a given subject area for a specific target population (e.g., community-school relationships for teacher trainees, leatherwork for craftsmen trainees, and basic accounting for school managers). Through concept analysis we will help identify major elements of the knowledge to be taught. We will arrange the concepts in each subject area into convenient networks and help select suitable examples for teaching and testing each concept. Through skills analysis we will help identify major skills and procedures to be taught. This will include the specification of algorithms and heuristics in the subject area as well as important discriminations and responses. Informational content analysis will identify various facts and interrelationships to be taught. Through affect analysis we will help identify items toward which the students are likely to exhibit significantly positive or negative feelings. The outcome of all these instructional analyses will be a sequenced set of specific behavioral objectives which will operationalize the scope and sequence of the curriculum.

Management systems analysis. This analysis is undertaken in two phases. During the first phase, we will work with our counterparts to identify existing staffing, scheduling, and management patterns at various institutions. This data will be used to select appropriate administrative strategies. The second phase will produce a more detailed analysis of different types of human and physical resources, and scheduling, organizational, and personnel variables. The outcomes of these management analyses will be detailed specifications of requirements for systems such as the MOE personnel system, the financial management system, and the information management system. These analyses also will provide the project staff with prescriptions for management design to support various instructional systems.

2. Design and Production Activities

Inputs to the design-and-production component of the IIR model include the results of the earlier analyses. Outputs include different versions of the instructional materials, methods, and management systems. Activities in this component are listed in the Table 2 on the next page.

Table 2

DESIGN AND PRODUCTION ACTIVITIES

PRELIMINARY ACTIVITIES	Collect analysis outputs. Collect instructional materials. Collect reference materials. Collect policy/administrative manuals.
PLANNING AND OUTLINING	Divide content into modules and lessons. Sequence modules and lessons. Specify instructional objectives. Specify information presentation. Specify learner activities and responses. Specify feedback procedures. List features of procedures and system. Prepare organization chart. Prepare job specifications. Prepare budgets. Prepare schedules.
PRODUCING THE PROTOTYPE VERSION	Write text. Produce illustrations. Produce typed copy. Produce typed copy. Produce illustrations. Assemble prototype modules. Write procedures and systems. Prepare job aids. Produce reference manuals.
PRODUCING THE EDITED VERSION	Edit language. Edit instructional design. Edit subject-matter content. Edit for feasibility. Edit format. Copy edit. Produce edited version.
PRODUCING REVISED VERSIONS	Revise through learner verification. Revise through laboratory tryouts. Revise through system tryouts. Produce the final version.
PRODUCING IMPLEMENTATION TRAINING MATERIALS	Produce teacher training materials. Produce administrator training materials. Produce orientation materials. Produce staff training materials. Produce supervisor training materials.

Before discussing the activities in Table 2, a few general comments may be made:

1. Our commitment to empiricism requires that we repeatedly modify the management systems, materials, and methods on the basis of expert reviews and student tryouts. Evaluation activities are intertwined with the design activities, especially in the later stages.

2. Different modules, methods, and management procedures are developed at different rates. Efficiency requires that we do not wait to outline all modules before writing the first one. This type of batch processing will enable us to keep pace with the demands from the field, to fully utilize the competencies of all staff members, and to incorporate the lessons learned from the development of earlier modules into the development of later ones.

Key features of the design and production activities in Table 2 are described below:

Preliminary activities. These activities will provide a smooth transition from the earlier analysis and planning activities described above in Section 2. These preliminary activities involve collecting and reviewing the objectives for instruction and goals for management, the description of various instructional and management strategies, and the specifications for the new system. Another preparatory activity involves the collection of locally-relevant texts and reference materials for instructional systems, as well as policy manuals and administrative documents for management systems.

Planning and outlining. In the case of instructional systems, the content for each subject area for each grade, for each teacher training course, and for each seminar will be divided into convenient modules and lessons and arranged into an efficient sequence. Specific instructional objectives will be stated for the lessons. An outline for each module will be prepared by sequencing its objectives and by specifying the information to be presented to the students, activities and responses required of the student, and the desired feedback.

In the case of management strategies, the key features of various procedures and systems will be listed and sequenced. Organization charts, job specifications, and procedural systems will be prepared. Budgets and schedules also will be specified.

Producing the prototype version. In the case of printed instructional materials, this stage will begin with writing the text and preparing illustrations. A draft version of the module will next be produced. In the case of mediated instructional materials, a treatment, a storyboard (which identifies the sequence of visual and audio elements), and a script will be produced. In the case of management strategies, the systems and procedures will be documented and various job aids (e.g.,

checklists, worksheets, flowcharts, decision tables, job specifications, forms, and procedural instructions) and reference manuals will be developed.

Producing the edited version. The prototype version will be subjected to rigorous review by experts and revision by editors to ensure that the target population will be exposed to the best available materials and methods. The expert reviewers will include specialists in management systems, personnel systems, financial systems, operational systems, systems analysis, language, instructional design, subject-matter areas, primary education, vocational education, teacher training, and instructional media.

Appropriate specialists will be recruited from the cooperating institutions in Lesotho whenever available. In language editing, not only the correctness of the language but also its appropriateness to the target students will be reviewed. Instructional design editing may modify the sequence of instruction, the types of learner activities, and the provision of feedback. Subject-matter editing will include the accuracy and appropriateness of the terms, concepts, principles, and examples. Primary education specialists will review the feasibility of use by typical primary school teachers in representative classrooms. Specialists in instructional strategy will review the material to ensure that it fits the state-of-the-art technology for the selected strategy. A copy editor will proofread the material carefully and ensure that it conforms to a consistent format and style. Media specialists will review the scripts and storyboards to evaluate continuity and audio-visual compatibility.

In the case of management systems, experts will verify the appropriateness and adequacy of planning, control, organizational design, and managerial decision making. Administrative specialists will suggest changes to improve the overall management. Distribution specialists will review current procedures for the procurement, storage, shipping, and selling of school supplies and materials. Systems analysts will suggest improvements of the information-management system. Personnel management specialists will help improve employment policies and procedures. Financial experts will rationalize and standardize budgeting, purchasing, and accounting procedures.

Producing revised versions. Instructional materials and methods will be tried out repeatedly with representative students at in different stages of development. Feedback data from these tryouts are very important, but they do not solely determine improvement of the instructional system. Instructional designers and evaluation specialists must use the feedback from students and teachers and convert them into prescriptions for revisions. A decision table prescribes the suitable types of revisions (e.g., simplification, illustration, exemplification, or resequencing) based on the types of problems identified through formative evaluation. Instructional designers will modify the

material and produce the revised version which will be tried out again. This cycle will be repeated until consistent results are obtained. Management systems also will be pilot tested and revised in a similar fashion.

Producing implementation training materials. Management components of the new instructional systems will be developed simultaneously with the instructional materials. Similarly, instructional components (e.g., seminars and workshops that accompany the improved financial management system) of management systems also will be developed simultaneously. Various competency-based training packages will be used to train teachers, supervisors, principals, paraprofessionals, and students on procedures for implementing of the new educational system. Different staff members, supervisors, managers, and administrators will be trained to implement new personnel, financial, and operational systems. In this step, suitable training manuals and methods will be developed.

3. Implementation and Institutionalization Activities.

Inputs to the implementation and institutionalization component of the IIR model include the instructional and management system packages from the previous stage and various plans from the analysis. Implementation and institutionalization activities are listed in the Table on the following page.

Table 3

IMPLEMENTATION AND INSTITUTIONALIZATION ACTIVITIES

STRATEGY DEVELOPMENT	Analyze adopters. Analyze new systems. Analyze climate of change. Develop general diffusion strategy. Develop specific institutional strategy.
DISSEMINATE SYSTEM	Increase awareness of the system. Provide basic information. Provide detailed information. Provide demonstrations.
DEVELOP TRAINING MATERIALS	Develop teacher training materials. Develop other training materials.
INSTALL SYSTEM	Prepare materials and equipment. Prepare facilities. Prepare people. Provide initial technical assistance.
MONITOR AND MAINTAIN THE SYSTEM	Monitor the system. Provide troubleshooting assistance. Provide clearinghouse for information. Upgrade and update system.

Before discussing these activities, we would like to present a few general comments.

1. This stage involves the implementation of products of all four components of the project -- and not the project itself. The participants and the beneficiaries of these two levels of implementation are different; the activities are also different.

2. Although implementation activities are presented after the analysis, planning, design, and production activities, they need not wait until the completion of all analyses and design. Some preliminary implementation activities will be conducted during the very early days of the project; institutionalization activities will be initiated from the first day of the project.

3. Information dissemination activities will parallel the design and production activities of the project. Periodic reports will be sent to the Management Committee, the Steering Committee, to U.S.A.I.D., and to selected host country institutions where new systems are to be implemented.

Key features of the five groups of implementation and institutionalization activities, cited in Table 3, are described below. These activities are grouped in the categories of strategy development, information dissemination, training materials, installing the system, and monitoring and maintaining the system.

Strategy development. These activities will take place during the analysis and planning stage and will be designed to identify key variables in the implementation strategy. Characteristics of adopters in relevant institutions, including their attitudes toward different innovations, will be are identified. In addition, the climate of change in the adopting institutions, and in the communities within which these institutions are situated, will be analyzed. This analysis will include variables such as the nature of the decision-making process, institutional receptivity to new ideas, incentives for being innovative, communication channels, and conflict-resolution procedures.

An analysis of factors within and outside the institution that encourage or inhibit changes also will be undertaken. The types of forces identified will include individuals, policies, resources, facilities, attitudes, values, and past events. Innovative characteristics of the new instructional and administrative systems also will be analyzed at this stage. This analysis will include factors such as simplicity, visibility, divisibility, compatibility, cost, and relative yield of innovation.

Based on these analyses, a general diffusion strategy for the project will be developed. This general strategy will be modified to meet the special characteristics of individual institutions. This modification will be based on the

identification of specific opinion leaders, acceptable innovators, and formal leaders in each institution.

Information dissemination. From the beginning of the project, appropriate institutions and individuals will be kept informed of the progress of specific components of the project. The type and amount of information, and the way in which it is presented will be matched to various stages of adoption. In the initial stages, for example, brief descriptions of the new systems will be distributed to increase the level of awareness of the institution. These descriptions will be included in a small and clearly written brochure which will appeal to the needs of busy readers and will instill curiosity about the new system. Another type of awareness activity will be by means of questionnaires mailed to solicit information about the needs of the adopters.

Further on within the project, another brochure will be distributed with information related to various actual or anticipated concerns of the adopters. This brochure will be in a question-and-answer format and written to identify and accept concerns, provide relevant and realistic answers, and promote continuing discussions. The next brochure will provide more information about the system to enable adopters to evaluate the feasibility and the utility of implementing it in their own institutions. This document will provide actual case studies, examples, and evaluative data.

Some of the materials for dissemination will not be in a print format. Radio announcements, videotape demonstrations, and slide shows will be used in the awareness stage. More extended media productions may be used in later stages. Demonstrations in seed schools will form a major source of information about the new management or instructional system.

Training materials. The design of the training materials for the implementors of the new instructional and management systems will accommodate the concerns and questions from the field. Our field staff recognize that implementation of any new educational system goes beyond the training of teachers: the school manager, the head master, other school staff, students, parents, and members of the community -- all have to be informed, prepared, and trained to accept and benefit from the new system. The project will develop appropriate training and orientation materials for all of these groups.

Similarly, new management systems require the training of the staff at various levels. Common elements in this implementation training will be provided simultaneously to all personnel. Specific concepts and competencies will then be presented separately to each subgroup.

Installing the system. Systematic and successful installation of the new system will contribute significantly to its operational efficiency. Before the system can be installed,

the institution has to be carefully prepared. One aspect of this preparation will relate to such things as physical facilities, space, furniture, equipment, and electricity. Another aspect is related to informing, training, orienting, and persuading people. The field staff will work closely with their counterparts to plan with the administration to specify human resource requirements and changes in job functions. They will work closely with the individuals involved in the day-to-day maintenance of the system respond to their concerns, and reduce feelings of being imposed upon. During the first few critical weeks of implementation, our project staff will carefully observe the local adopters and receive appropriate feedback about requirements for on-the-job training.

Monitoring and maintaining the system. The new system will be systematically monitored to collect information on local adaptations and improvements, to anticipate unexpected problems, and to provide any technical assistance required. The project staff also will work to expand the system to new institutions. Built into the project plan will be the incorporation of the core staff into existing agencies to conduct these expansion activities and to periodically evaluate, update, and upgrade the system.

4. Evaluation and Revision Activities

Inputs to evaluation and revision activities will include materials and methods at various stages of development. Outputs will include revised and refined versions of these materials and methods, and evaluation reports. Evaluation and revision activities are listed in Table 4 on the following page.

Table 4

EVALUATION AND REVISION

PRELIMINARY DESIGN	Identify expert panel. Identify representative students. Identify evaluation variables. Prepare preliminary evaluation designs.
CONSTRUCTION OF MEASURES	Collect available measures. Construct criterion measures. Construct affective measures. Construct performance measures.
INITIAL VERIFICATION	Organize initial verification. Coordinate initial verification. Revise materials and methods.
LABORATORY SCHOOL TRYOUTS	Organize seed school tryouts. Collect tryout data. Analyze data. Revise materials and methods.
SUMMATIVE EVALUATION	Identify key questions. Collect/construct measures. Choose evaluation design. Select control groups. Implement educational system. Collect data. Analyze data.

Before discussing these activities, a few general comments are in order:

1. Evaluation and revision begins with the inception of the project. Many of the analysis activities listed earlier are partly evaluative since they involve collection of data and planning for the improvement of an existing system.

2. Most evaluation activities are formative in nature; they provide data to improve the system during its development stage and are intertwined with design and production activities. Evaluators must work closely with designers throughout a project in order to be most effective.

3. Two major sources of data comprise formative feedback: expert opinion and trainee/personnel behaviors. These sources complement each other. Even the most knowledgeable expert cannot predict the exact behavior of trainees or staff members in response to elements of an instructional system. On the other hand, no trainee or employee can judge the quality of instructional design, the accuracy of the subject-matter content, or the appropriateness of a management strategy. In our approach to evaluation, both data sources play key and complimentary roles in determining the final system.

The basic features of our proposed evaluation and revision activities, presented in Table 4, are discussed below: These activities are grouped into classes involving preliminary design, construction of measures, initial verification and revision, seed school tryouts, and summative evaluation.

Preliminary design. These activities will ensure the availability of necessary human resources and specify the preliminary formative and summative evaluation designs. During this stage we will incorporate the information from earlier analyses and identify a panel of local experts to form our review group. For instructional systems, this panel should include specialists in language, curricular areas, primary education, vocational education, teacher training, and media. For management systems, the expert panel should include specialists in organizational development, systems analysis, personnel systems, financial management, resource management, marketing, and administration. In addition, we will identify a pool of representative trainees and students for immediate learner verification of all preliminary instructional design strategies.

During this preliminary stage we also will identify relevant educational variables. General categories of these variables are listed in Table 5 (Typical Evaluation Variables) on the following page. Specific dimensions of evaluation depend upon the types of instructional media and strategies, and the objectives and content of instruction. Based on these variables, we will work with our counterparts to prepare appropriate designs for the formative and summative evaluation of instructional systems.

Table 5

TYPICAL EVALUATION VARIABLES

Input and context variables:
- Student characteristics.
  - age
  - sex
  - family background
  - previous schooling
  - entry level skills and concepts
  - language skills
  - reading skills
  - study skills
  - test-taking skills
  - attitude toward school, subject area, instructional mode, peers, and self
- Community characteristics
- School characteristics
- Classroom characteristics
- Teacher characteristics:
  - age
  - sex
  - experience
  - professional training
  - specialized training
  - class preparation
  - attitude toward job
  - attitude toward innovation
  - teaching style

Process and program variables:
- materials used
- instructional mode
- classroom activities
- grouping
- program duration
- physical facilities
- costs
- teacher-student interaction
- interactions among students
- interest level
- time on task

Outcome variables:
- criterion test results
- delayed test results
- transfer test results
- performance test results
- attitude toward new system, subject area, school, peers, and self
- teacher acceptance of the new system
- parental acceptance of the new system

These designs will specify the purposes, questions, audiences, roles, costs, data sources, sampling plans, instruments, and detailed procedures for the collection, analysis, and interpretation of data.

Construction of measures. During this stage, suitable tests and measuring instruments for all variables related to the instructional and management systems will be collected or constructed. Every effort will be made to use existing data sources in Lesotho and locally-available tests. However, a large amount of original tests construction is anticipated, especially for formative evaluation. For instructional systems, the most important tests are criterion-referenced achievement tests to measure student attainment of instructional objectives, especially basic educational competencies. In addition, various questionnaires, attitude scales, and interview protocols will be constructed to collect information from staff members and others.

Constructing checklists and observation systems for teacher and student behavior forms comprises another critical activity in this stage. Various behavioral observation forms and questionnaires also will be prepared for collecting process data from students, teachers, administrators, parents, and members of the community. All of these tests and measures will be checked to ensure comprehensive coverage of the relevant input, process, and output variables.

Multiple indicators of efficiency and productivity will be identified for the evaluation of management systems; questionnaires and schedules also will be constructed for analyzing available data.

Initial verification and revision. For instructional materials, this stage of the formative evaluation will involve initial, informal developmental tests for individual students. Such learner verification is best conducted by the instructional designer in a face-to-face situation with the learners. The instructional materials would be in an edited but unfinished form. A "lean" version of the material containing the minimum instructional content, is used at this stage to permit easy identification of areas that need additional instruction. The tryouts are conducted with individual learners unless, of course, the selected instructional strategy involves small groups. At the end of each tryout session, the learner is informally requested to give general comments, suggestions, and reactions. After a few more of these initial verification and revision sessions, formative evaluation can move to the second stage of tryouts, involving use of the seed schools.

Laboratory school tryouts. The purpose of this stage of formative evaluation will be to further refine instructional materials and methods on the basis of feedback from actual operating schools. A laboratory school will be identified by the project staff. Details of the evaluation procedure will carefully be agreed upon with the administrators, staff, and

students of this school. Before undertaking the tryouts, multiple copies of the revised version of the instructional materials will be produced and all necessary tests and instruments assembled. Detailed procedures for managing the instructional system also will be prepared.

Summative evaluation. The final field test of a system is ideally conducted by an outside agency to ensure the objectivity and credibility of the results. The evaluation staff from the project should be involved in planning the evaluation but not in the collection or analysis of the data.

The purpose of a summative evaluation is to decide whether a new system is efficient and cost-effective enough to warrant large-scale dissemination. Within this general purpose, specific questions related to different variables are determined as a preliminary activity. Suitable measurement instruments are selected to provide answers to these questions. In addition to the criterion-referenced measures used to check student achievement, we may need norm-referenced measures for objective comparisons of the effectiveness of alternative educational systems. Plans for data analyses also will be specified at this time. These plans may result in modifications of the instruments and in the development of coding sheets.

The experimental educational system will be implemented in a replicable fashion and data collected at appropriate intervals from all schools involved in the field test. These data will be coded, summarized, and analyzed. A final summative report will be produced.

5. Management and Administration Activities

Project management is a critical factor in the success of all technical-assistance projects. More projects fail because of poor management than because of lack of resources. Different activities in this component of our model are cited on the next page in Table 6 (Project Management Activities).

Table 6

PROJECT MANAGEMENT ACTIVITIES

STAFFING	Writing job specifications. Identifying potential staff members. Recruitment. Evaluation and selection. Salaries and benefits. Termination.
STAFF TRAINING	Specifying standard procedures. Preliminary training. Inservice training. On-the-job training.
TEAM BUILDING	Goal setting. Collaborative planning. Participatory decision making. Conflict resolution.
SUPERVISION	Appraising performance. Coaching. Disciplining. Providing incentives.
SCHEDULING	Setting production targets. Monitoring. Reallocating staff resources. Acquiring temporary help. Handling emergencies.
HANDLING FINANCES	Setting budget categories. Establishing financial system. Payrolls. Keeping records. Handling emergencies.
HANDLING COMMUNICATIONS	Meetings. Memoranda. Reports. International communications. Communication with sponsors. Communication for dissemination.

Key features of these activities are described below in the categories of staffing, staff training, team building, supervision, scheduling, handling finances, and handling communications.

Staffing. We will begin with an estimate of the personnel requirements for the project and job specifications for key positions. We will establish appropriate criteria for selecting qualified, experienced, and effective technical advisors for these key positions. We will provide technical assistance to the host-country institutions for the selection of local personnel, counterparts, and participant trainees if so requested.

Staff Training. A significant amount of personnel training is anticipated in technical assistance projects. We will establish standard operating procedures for various key activities and produce reference manuals and job aids for these procedures. Staff members will be trained on the procedures with an on-the-job format. Their skills will later be refined and updated through periodic seminars and inservice workshops. Individual performance problems will be solved through supervisory coaching and editorial feedback.

Team Building. Project personnel are comprised of individuals from different nations, regions, cultures, institutions, and professional disciplines. Systematic efforts are required to enable them to evolve into a cohesive and productive team. This will be done through participatory training activities dealing with collaborative goal setting, planning, decision-making, and communication. Through appropriate organizational development techniques, the staff will learn to work as a team, receive and give feedback, and suggest techniques to improve quality and productivity. These team-building activities will become a part of the regular project procedures.

Supervision. Using a modified management-by-objectives format, the performances of each staff member will periodically be assessed against individual objectives. All exemplary performance will be reinforced through recognition and other appropriate incentives; unacceptable performance will be rectified through coaching and on-the-job training; and inappropriate performance will be corrected through policy-based disciplinary actions.

Scheduling. A realistic and detailed schedule will be produced as a part of the initial project activities. This schedule will periodically be revised on the basis of suggestions from various staff members and changing external conditions. Actual production rates will periodically be compared to projected rates. Discrepancies will immediately be identified and corrected through a reallocation of the staff resources. If this is not possible, temporary help and consultative assistance will be obtained to avoid major delays.

Handling Finances. A realistic budget for the project will be produced initially. This budget will periodically be revised on the basis of progress, problems, and plans. A systematic set of local procedures will be established for receiving funds, paying bills, meeting local payrolls, settling accounts, and reimbursing expenses. Careful records will be kept of all financial transactions.

Handling Communications. Standard operating procedures will be established for maintaining regular and reliable communications between the consortium and the field staff. These procedures will cover meetings, memoranda, and reports. Internal communication will use our own telex system and will provide timely information about the progress, problems, and plans within each department. The project staff will systematic procedures for collecting and recording data for regular reports to the sponsoring and coordinating agencies. Another critical type of communication serves a public-relations function. Information about the goals and progress of the project will be sent to different host-country educational institutions and other agencies.

APPENDIX X

A TYPICAL DAY IN AN IEL SCHOOL

APPENDIX 10

A TYPICAL DAY IN AN IEL SCHOOL

The Improved Efficiency of Learning (IEL) Project in Liberia has established a number of primary schools where the IEL instructional system is used. A major component of this instructional system is programmed teaching (PT) materials and methods. This annex, excerpted from the IEL Implemented Manual, describes what happens in the PT classrooms.

A TYPICAL DAY FOR A PT STUDENT

My name is Flomo. I live in Falala, a small village in Bong County, and I am in the second grade. I go to school each day because I have a good time and I learn many new things. I can read sentences, and I can write many words.

My school is an IEL school, and I was in IEL last year. My friends and I have a good time learning together. Each hour we study a different subject. Every day we study Language, Mathematics, Reading, and either Science or Social Studies.

When we come to school in the morning at 8:00 o'clock, we first sing the National Anthem and have devotions. After that, we get together in the classroom for the first subject. The subject my friends and I study first is Language.

We first sit in front of the big chalkboard that the teacher uses to help us learn. For this first 15 minutes we are taught directly by the teacher. Miss Musu, my homeroom teacher, calls this way to learn "direct instruction." There are about 15 of us who sit in front of Miss Musu for direct instruction.

Everything that we do is clear, but we must all listen and watch very carefully because we have to answer together when Miss Musu signals with her hand. She first teaches us something, then asks all of us a question, and--when she signals--we all answer together.

Sometimes I am not too sure of the right answer, and Miss Musu may help me. First, she may ask me for the answer. If I don't know, she tells me. Then she will ask me again, and smiles when I give the right answer. After I answer, she asks the question again to the whole group. This time, we all answer correctly.

The kinds of things we learn, and the kinds of questions that Miss Musu asks, are not always the same. Sometimes she asks us to say the sound of a letter or of a world. Sometimes she gives a sound and asks us for the correct letter. We sometimes compare sizes of things such as smaller, larger, and taller. Sometimes we add and sometimes we subtract.

Whatever we do in direct instruction, we do it very fast. Miss Musu goes over the same things many times. We can't forget because we get so much practice.

We get even more practice after the direct instruction period is over. After direct instruction we do "review" and "practice." We get plenty of practice on what we learn. We can't forget.

After direct instruction, we join our own small PT peer groups. There are five of us in my group. We are all friends, and we like learning together. Miss Musu let us choose a name for our group. The name we use is "Rice Birds."

Whenever Miss Musu wants us to do something, she says something like: "Will the Rice Birds please help me?" We like the name we chose because it makes us feel free and happy.

After direct instruction, then, the Rice Birds get together for Review. Miss Musu gives us our Review Booklets and tells us what to do. Her instructions to us are easy to understand. They usually are something like this: "Rice Birds, please turn to page 10 in the Language Review Booklet. You will review page 10 and page 11. You are to copy the words in your own copy books. When you are done, take turns and 'show and tell' each other what you have done." We know how to "copy" and what to do in "show and tell" because we learned way back in the first grade. If we have any problems or don't understand something, we talk about it together. Usually, we solve our own problems, but sometimes we have to ask Miss Musu.

The things we study together in Review are the very things that we just learned in direct instruction. Miss Musu told us that "review" means to study again. These reviews really help us a lot. If there is anything that one of us did not understand in direct instruction, we can usually clear it up in review. One of us "birds" will know the answer. It sure helps being friends because friends like to help each other, and we are not afraid or ashamed to tell our friends when we don't quite understand something.

Review also lasts 15 minutes. When it is over, we Rice Birds stay together for "practice." The way that we learn in practice is the same as the way we learn in review. What is different in practice is that we study things that we learned some time before. Mostly we practice reading and mathematics. Miss Musu says that if we don't practice these things every day, we might forget how to do them easily. We haven't forgotten because we have "practice" four times a day.

Practice goes on for 15 minutes. When we are finished, it is time for us to go back to Miss Musu for some more direct instruction--but this time in a different subject. Every day we have direct instruction, review, and practice in four subjects--Language, Mathematics, Reading, and Science or Social Studies. And we go through the same three kinds of learning for each subjects.

After we have studied Language and Mathematics each morning, Miss Musu stops the whole class for what is called a "remediation period." We have a remediation period every morning. Mostly Miss Musu will repeat for the whole class one or two of the direct instruction lessons that were the most difficult. Also, if one of us is having some problems, she may ask someone in our group to help out by going over the lesson in the Review Booklet again. We also do this if one of us has been sick and out of school. This remediation period is a good idea because it helps to make sure that nobody falls too far behind the others.

After the remediation period, we always have recess. The boys usually play soccer, and the girls play tag or other games. We think that recess is too short most of the time. It seems that the bell rings too fast because we are having a good time.

When we get back to our homeroom, Mr. Gbellemah is in charge. He takes care of the second grade the final two periods. Miss Musu goes to Mr. Gbellemah's homeroom in the fifth grade while he helps us here in the second grade. Mr. Gbellemah is OK, I guess, but I like Miss Musu better. Maybe he is a little more strict with us.

The last two subjects are Reading and either Science or Social Studies. We start each subject exactly as before by sitting with the teacher for direct instruction. After direct instruction, we go to our own Rice Bird group to review what we have just learned. And, after review, we stay together to practice basic skills.

That pretty well covers my day in school. It is a lot easier to do that it is to tell about.

At the end of each day, we all check out a Practice Booklet to take home. The one we check out is the last one that we studied in school. Each day there are four pages of practice that we study in school. There are many other pages in each practice booklet, and we can study them if we want to. We second graders are not the only ones who go over these booklets at home. Our parents and brothers and sisters also like to study them. Sometimes we study them together at home.

That's about all that happens on most days. About every three weeks, we have two days of tests. The first of these days, the tests are given in direct instruction and we take turns answering out loud. The tests take about 15 minutes--the same period as direct instruction. We also go to our groups for review and practice. The second of these tests, however, is given to the whole class, and we have to answer the questions in our copybooks. There is a different test for each of the subjects, and these tests last all together about two hours. When we are finished, Miss Musu lets us go home or play at the school. She puts the grades from these tests in our record books.

At the end of the first semester, and again at the end of the year, there is a long test that lasts one hour each day for four days. Our grades on the semester tests and on the module tests that we have every three weeks are put together by Miss Musu to make up the grades for our report cards. My grades are good, especially in mathematics. Very few students have many problems. Those that do have problems very often are the same students who don't come to school every day. I like IEL, and my parents say that I am learning many things that my older sister never learned when she was in second grade.

A TYPICAL DAY FOR A PT TEACHER

Good morning. I am glad that you are visiting our school. We are very proud of what we are doing with the younger children who are in programmed teaching instruction. I know that, when you see how they are learning, you will be surprised how children in the first grade take responsibility and how alert they all seem. Even though I have been teaching in this IEL school for almost three years now, I am still surprised at how much they can do. I suppose that we have all been conditioned to seeing children sit passively in a classroom while a teacher does his or her best to pass on some learning. Our children are far from passive. As a newcomer, you undoubtedly will think that they are a bit noisy and rowdy. The more you watch, however, the more you can see that these children are actively learning. Again - Welcome to our class!

If you will please sit here so that you can see the whole room, you will be able to watch everything that goes on. I will try to explain.

Here at the front of the room are 18 children who will be studying with me in what we call "direct instruction." At the right in the rear of the room are three small groups who are in a "review" session. Three other small groups at the left side are working by themselves in a "practice" session. I work directly with this group at the front, but I keep my eye out for any problems

in either the review or practice groups.

In "direct instruction," I follow the directions given in a PT module. These directions tell me exactly what to show the children in the group, what to say, how to ask questions, and how to make corrections. I use hand signals to make sure that all the children give their attention to the item I am teaching and that they all respond at the same time.

I hold my hand up with the palm forward to gain the children's attention. They know that when I hold my hand up like this something else is going to happen right away. The children know this signal as "attention." The next signal is one that they call "get ready." I hold my hand out flat like this with the palm down.

For the final signal I always point with my finger. If I want the group to answer a question together, I point at the group. If I want them to answer a question about something in the module or on the chalkboard, I point to the item, and they respond the moment I touch it. If I ask one student to answer alone, I point at that student when I want the response. Children get used to these signals very quickly and seem to have no problem with them. Follow me as I conduct direct instruction.

The teacher held up a PT Reading Module. On it was a large picture of hen and the words, "pen" and "hen."

She held up her hand to gain the attention of the children and said "Read this word." After a short pause, the teacher pointed to the word "pen," and all the children said "pen" aloud. She then said "Read this word" and pointed to the word "hen." All the children said "hen."

Her next question to the group was "Does this word go with the picture?" After a slight pause, the teacher pointed to the word "pen." The children responded "No." The teacher then said, "Does this word go with the picture?" When she pointed to the word "hen," the children all said "yes."

During this lesson, there were a number of pictures and words including: red/bed, men/den, wet/web, net/ten, ben/pen, and set/net.

Only once did she halt in this fast-paced question/answer mode of instruction. She saw one child pause at the "net/ten" questions. She called his name and said, "Read this word," and pointed to the word "net." The child said ten." The teacher then said, "Now, it is my turn." She paused and said, "Read this word." She then pointed to "net" and said "the word is net."

She then called the child's name again and said, "Your turn. Read this word." When she pointed to the word "net," the child said the word "net." The teacher told the child that her answer was right and said "very good." The teacher then said, "Everybody, read this word," and pointed to the word "net." All children responded with the word "net," and the teacher congratulated them.

My description of what I saw sounds like a lengthy way to teach, but it all went very quickly and naturally. When all of the words were finished, the teacher went back to review some of them until the bell rang ending the fifteen-minute session.

You can see how fast the direct instruction goes. It keeps me very busy because I not only have to give direct instruction to one group, but I also have to keep my eye on the other children doing practice and review. We have three direct instruction groups in this grade because there are 55 children enrolled. That means that I will give the same direct instruction that you

just watched three times in a row. When one group is finished with direct instruction, another group moves in, and when that group is finished, the third group moves in. I have five minutes between sessions. I use this time to instruct review and practice groups on what they are to do and to get materials ready for the next direct instruction lesson.

In one school day, there are twelve direct instruction sessions like the one you just observed. One subject is given three times, and there are four subjects covered each day. This amount of involvement by a single teacher can become a burden if done day after day. Fortunately, the IEL system insists that teachers share responsibilities. In my case, I teach here in the first grade for the first two periods and move to the fourth grade for the last two periods. The fourth grade teacher and I trade responsibilities. The work in the fourth grade is interesting, but it is not so demanding on a teacher's time as is PT teaching, particularly direct instruction.

After each direct instruction lesson, the children move on to do a review of what was learned in direct instruction. They split into three small peer groups. During the five minutes between sessions, I give each child a Review Booklet, show them what pages to cover, and read from the PT module the instructions for doing the review. In the case of the direct instruction just completed (the one with "hen/pen" and "net/ten") my instructions to the review groups is to copy each word in their copybooks and to read the words aloud to each other.

After the fifteen-minute review, the peer groups begin a practice session. The activities in practice are similar to review activities, but the content that the children go over is material that they learned some weeks before. Practice sessions concentrate on basic skills in reading comprehensions and computation. Each small peer group is given a different Practice Booklet at the start of the day, it is kept by the group throughout the day, and it is taken home at night.

My responsibility to the groups in Review and Practice is to give out the booklets, explain how to do the review and practice activities, and the activities of review and practice are [illegible]nt enough to maintain interest. If a group does have problems, however [illegible]of the students lets me know about it, and I will stop direct instruction [illegible] enough to help out the review or practice groups.

The 14th and 15th lessons in a PT module are tests. The 14th lesson allows me to ask questions of individual students on the previous 13 lessons in the module. It helps me identify those children who may need extra help during remediation. The 15th lesson is a written test. I wait until all groups have completed lesson 14 and give the lesson 15 test to all children in the class at one time. Since these tests are given every three weeks, I am able to combine grades on two of the tests to give a single grade for a six-week marking period. Semester tests also are given. We use the last week of each semester for review and testing.

The life of a PT teacher is a busy one. But it is extremely rewarding because these children are truly learning at a rate and at a level of comprehension that many of us in the past would not have thought possible. I am proud to be part of the IEL program because I can see real progress being made.

A TYPICAL DAY FOR AN IEL PRINCIPAL

Good Morning. My name is Mr. Sambah and I am the principal of this IEL school. I am glad that you can visit us and that you are taking an interest in the kind of education that IEL provides for our children.

You now have talked to several students and teachers. I am sure that you learned much about IEL from them. They are all actively involved in IEL activities. I, too, am involved but in a slightly different way. It is my responsibility to supervise all that goes on in the school so that the management of the system will insure that IEL instruction is carried out in the most effective way.

I visit each class several times a day to observe, to correct, and to give positive feedback for activities that are done well. I have a checklist of the activities that I look for in PT classes. I use this checklist to give feedback to my teachers.

In PT classrooms, I observe, identify possible difficulties, talk them over with the teachers, seek agreement, and give positive feedback to teachers who have done well. I have to know the system as well, if not better, than the teachers themselves.

We also have worked out schedules to take care of teacher absences. As with other activities, we on the faculty share the load when one of us is absent. I, too, fill in as needed. It is important children are never sent home because a teacher may be absent.

The teachers have told you about their care in checking out materials to children for homework. Parents are financially responsible for any materials lost and not returned. The parents are responsible to the teachers who check the material out. The teachers, in turn, are responsible to me. And I am responsible to the Ministry of Education for all the materials received by this school. An inventory is made by District Education Officers once a semester, and I am ultimately responsible for all materials here.

Although I supervise the day-to-day operation of the school, the County Education Office also takes a great deal of interest in our activities. Education Officers visit and observe activities once a semester. I welcome their advice and encouragement.

LIST OF INDIVIDUALS CONTACTED

Ministry of Education

Hussein Mohammed Said, Director General, Education Development
Yasin Hashi Aden, Director General, Primary, Secondary, Vocational/technical Education
Ali Hassan Gaal, Director, Planning Division
Abdullahi Yassin Diriye, Director, Primary Division
Mohamed Said, Director, Teacher Training
Hassan Dahir Obsiye, Director, Curriculum Development Center
Dahir Abdullahi Waberi, Head of Teacher Training Task Force
Abdullahi Mohamoud Abtion, Director, Inspectorate
Jama Salah Mohamed, Head, Coordination Service, Inspectorate
Mohamed Baran Xassan, Inspectorate
Ibrahim Hama Lisamon, Inspectorate
Ismail Momin Aar, Director, Adult Education Institute
Michael Savage, Technical Advisor, Curriculum Development Center
Edward Risler, Technical Advisor, Curriculum Development Center
Jim Goodall, Technical Advisor, Curriculum Development Center
Chris Ramsden, Technical Advisor, Curriculum Development Center
Hawa Aden, Director, Women Education Center

Ministry of Culture and Higher Education

Hussein Musse Ali, Dean, Lafoole College of Education
Said Osman Fahiya, Associate Dean, Lafoole College of Haange, Dean of Arts, Academy of Sciences and Arts
Ahmed Ali Bokir, Head of Somali Language Development, Academy of Sciences and Arts Education
M.T. Ramje, Professor of Education, Lafoole College of Education
Hassan Farah, Head, Department of Audio-Visual Aids, Lafoole College of Education
A.A. Roble, Department of Geography, Lafoole College of Education

Ministry of National Planning

S. Chidambaram, Director, Development Planning

Donor Community

Peter Conze, Advisor to Ministry of Planning, Deutsche Gesellshaft fur Techniche Zuzammenarbeit (GTZ)
Nurraddin Haji Hussein, Director, IDA Project
Adel Khalifa, UNDP
Farah Abokor Khayre, Social Anthropologist, United States Agency for International Development
William Stanley, Experiment for International Living
Michael Silverman, Experiment for International Living

Technical Teachers Training College

T.R. Ramanna, Instructor