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A REVIEW OF LITERATURE ON EFFICIENCIES IN PRIMARY EDUCATION FOR SUB-SAHARAN AFRICA

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Summary of Findings

This report is the result of a limited literature review of recent work on the issue of efficiencies in education in the developing world. The specific focus of the review of literature was:

1. Primary education

2. Recent studies dealing with issues of efficiency in sub-Saharan African educational systems at the primary school level.

3. Other Third World examples of innovations introduced at the primary school level to enhance efficiency.

4. And AID projects that have successfully implemented efficiency measures at the primary school level.

The initial discussion concerns the definitions of internal efficiency in the literature, the use of production-function analysis as a measurement of internal efficiency, and the identification of the primary symptoms of inefficiencies in primary school systems. In defining internal efficiency as the ability of a system to produce outcomes given certain limited amounts of input, symptoms of inefficiency were identified as barriers to the smooth running of this system, or as wasteful expenditures on excessive input resulting in limited output.

A review of the UNESCO data on wastage rates provided a detailed study of the trends and patterns for drop-out and repetition rates in Africa at the primary school level. As symptoms of an inefficient system the report looks, in some detail, at the UNESCO findings and the implications of wastage levels for strategies to redress inefficiencies. In general the results of the UNESCO study for African primary education were:

1. While the average repetition rate for Africa declined slightly for the period of 1968 to 1976, from 24.4% to 22.1%, the actual number of primary school students enrolled increased by 76% thus the number of students repeating actually increased by more than 630,000 or 19.8%.

2. When the data are disaggregated by year and level of repeater enrollment the most striking pattern was the tendency for rates to be highest at the final grade of the cycle, with an excessively high repetition rate for the first grade as well.

3. With respect to the drop-out rate as measured by survival rates of cohorts in primary school, the proportion of the cohort dropping out prior to completion of grade four ranged from 0% to 61% with a median of 22%.

4. There was no clear distinction of drop out patterns by sex.

5. Total wastage, which combines both drop-out and repetition rates was measured in terms of the number of student-years spent on repetition and drop-out, calculating the portion of the total number of student-years used by the cohort which have been 'wasted' on repetition and drop-out. The median level of wastage was 33.7% in Africa with the level of wastage generally higher in French-speaking countries.

6. Unlike other Third World regions, the majority of the African wastage rate is caused by repetition.

7. Correlation and component analysis performed on the macro data indicated that while drop-out was closely related to economic factors governing the demand for and the supply of education, the level of repetition depends more on the factors internal to the educational system, particularly the conception of learning prevelant in each country and the

teaching and evaluation methods used.

The report next turns to a discussion of some of these internal factors related to wastage and other inefficiencies as they were defined in the literature. Teachers were singled out as a fundamental element of success in the efficient delivery of education. A World Bank study on teacher characteristics and student achievement isolated three variables that were significant in affecting student achievement:

1. teacher ability and achievement level
2. teacher experience
3. teacher expectation of student performance

Pedagogy was frequently cited in the literature as a contributing factor to inappropriate educational systems. Criticized for being overly 'Westernized' and culturally removed from the milieu of the society it was supposed to be serving, many teaching methods were regarded as inconsistent and alienating.

Class size and curriculum findings indicated that while class size did not adversely affect the achievement levels of students when modestly increased, it could be a source of savings especially when effectively combined with teaching technologies such as radio or television, and pedagogical innovations as exampled by programmed learning/teaching. Curriculum, however was seen to contribute to inefficiency because it remained contextually and structurally a reflection of former colonial curricular standards without regard for indigenous educational objectives and social goals.

A final element of internal inefficiency was administration. The literature's discussion of administration ranged from local

and school-based issues to national ministerial overlap. In all cases poor administration in one form or another was described as a barrier to efficient education.

In its review of the concept of external efficiency and its relationship to internal efficiency and primary education, the report cautions that the conventional methods of benefit-costs analysis are not entirely dependable because of the lack of directly attributable benefits, particularly immediate benefits, and the complex nature of cost estimation in education. By way of illustration a brief description of cost and benefit measurements is included, as well as a critical appraisal of rate-of-return analysis and manpower planning. Finally the idea of relevance of education vis-a-vis social, economic, political and educational objectives is summarized from various sources.

The remainder of the report dealt with specific recommendations for ameliorating the efficiency of primary schooling in Africa given the symptoms previously discussed. Starting with specific recommendations for improving elements of the educational system identified as contributors to inefficiency, the review broadens to include inputs that are not limited to educational resources and considers a more comprehensive response to inefficiencies.

A Checklist of Efficiency Factors and Recommendations:

1. Teacher training which is innovative and appropriate to the needs of the recipient population, with specific attention to pedagogies for large class size, limited text availability, and the special needs of disadvantaged children;

2. Delivery of teacher training which is cost-effective using non-

traditional methods including radio and television technologies where appropriate, stressing the adaptation of indigenous teaching methods and innovations such as programmed teaching and learning.

3. Development of strategies to encourage teachers to stay in teaching including the provision of greater incentives to rural teachers in the form of subsidized housing or differential pay scales.

4. Thresholds for teacher training levels need to be identified at which further investment in training would not result in efficiencies.

5. In conjunction with the upgrading of teacher training is the need to develop, produce and distribute teaching materials including texts. In-country production and distribution of texts and materials should reflect curriculums which are indigenously oriented and financially accessable to students and teachers.

6. Despite the difficulties in revamping colonial curriculums currently used in many school systems, it is essential to the success of primary school programs; one aspect of change noted was the language of instruction which continues to be the former colonial language in most cases, and was indicated as a factor in first year repetition.

7. Within the relm of curricular change further experimentation and adaptation should be untertaken with regard to innovative curriculum including multi-graded classrooms, the use of teaching assistances and programmed learning in conjunction with peer teaching.

8. Further testing of radio and television systems which have the capability to rapidily respond to manpower needs and to disperse high quality teaching resources to geographically isolated or deprived areas is needed.

9. Consideration and re-evaluation of existing standards for grade

retention and promotion given the findings of a recent World Bank study which showed no positive effects were achieved through grade retention alone. UNESCO simulated cost estimations of several retention options indicated substantial potential for economic efficiencies without cost to academic objectives given the arbitrary standards currently used.

10. What is referred to as a sector approach in the paper is a macro perspective of efficiency issues. The central hypothesis is that as school systems expand at the primary level they icreasing draw from disadvantaged populations and that the country's investment in formal schooling is disproportionate to its investment in human capital, basically nutrition and early childhood environmental stimulation. Future effectiveness of primary schooling will depend on the present policies aimed at raising the quality of early environmental stimulation and nutrition. Several community development projects using primary school facilities and faculties are examples of this approach found in the literature and cited in the report.

11. The need for a working document within national and local bodies responsible for education which continually checks the balance between the products of the educational system regarding the knowledge, skills and understanding gained from school, and the ultimate educational and social objectives of the schooling system, is necessary in order to monitor external and internal efficiency.

12. Finally the report reviews Manuel Zymelman's financial distribution formulas which respond to the efficient management of school systems and the achievement of specific goals through the distribution and regulation of funds allocation.

"The case for investment in primary schooling is overwhelmingly that it makes people more productive at work and in the home. It goes beyond the attainment of short-run consumption or equity goals, and far from being an obstacle to higher rates of economic growth, it helps to achieve them. Primary education facilitates the attainment of other objectives of social policy, particularly in the fields of fertility control, improvements in health, nutrition, literacy, and communications, and the strengthening of national culture." (Christopher Colclough, 1980)

1. Introduction

Primary education in sub-Saharan Africa has been expanding substantially for the last twenty years. Given the recent confirmations of the positive effects of schooling, in conjunction with the ever increasing burden of financing larger enrollments over longer periods of time, governments, ministries of education, educational planners, and donor agencies are assessing the efficiency of school systems and the delivery of learning skills. The intent of this paper is to review the current literature on the subject of efficiency in education, focusing on primary schooling in sub-Saharan Africa, but drawing from examples in Latin America, Asia, and the US.

The paper will define the term internal efficiency in its various forms found in the literature and then review the symptoms of internal inefficincies, particularly a broadbased study conducted by UNESCO on drop-out and repeater rates and trends. Also included in this section of the review will be several Workd Bank studies on promotion and repetion practices, teacher training and student achievement, and the effects of class size on achievement. Other sources of inefficiencies will be mentioned including school mapping and optimal building use.

The paper will then define the concept of external efficiency and review the most practiced methods of determining external efficiency to indicated how ellusive the term actually is and to underline the significant difficulties encountered in the estimation of an efficient

system. From there the paper turns to the discussion of strategies for redressing inefficiencies in the primary school system as they are identified in the literature reviewed.

2. Definition of Internal Efficiency

Internal efficiency objectives focus on economic resources which enter into the production of educational services, and the judicious allocation of these services, among and within educational activities, to achieve the highest feasible level of cost-effectiveness (cost-effectiveness in its broadest definition is the relationship between costs and the level of goal attainment as measured by achievement of program objectives or by other proxy measures, or indicators). Internal efficiencies of educational programs include the pedagogic process, the level of learning achievement, the number of learners who complete an educational cycle and their corresponding cost inputs as well as broader cost questions such as optimal facility use and financial mechanisms for cost control.

Manuel Zymelman cautions that in measuring efficiency of an educational program it is important to evaluate the unplanned by-products of education policy decisions at the same time as the stated policy goals. (Zymelman, 1973) Samuel Bowles in a more generalized statement underscores Zymelman's point by indicating the scope of impact: "Schools influence virtually every aspect of society from culture and the esthetic environment to the level and form of political participation enjoyed by the citizens. Often the pattern of education most conducive to economic growth is incompatable with important esthetic, ethical and other values." (Bowles, 1969, p. 72) For this reason it is important to view efficiency questions in the broadest terms possible and not to isolate issues in the classroom or school system.

John Simmons discusses internal efficiency in terms of investment versus the quality and quantity of output. He describes two basic schools of thought on the matter of internal efficiency:

1. The technical school of planning measures inputs in terms of the quantity and cost of resources, including teachers, and output in terms of student test performance and grades.

2. Structuralists emphasize the qualititative dimensions of inputs, what is taught and how, and the nature of the outputs, including personality traits and norms of activitites learned in the classroom. (Simmons, 1980)

Even in the simplest of terms the definition of internal efficiency as the difference between actual and potential output (Zymelman, 1973), the measurement of the concept is far more complex and ellusive. The most frequent method of measuring internal efficiency is Production Function Analysis. By way of background to this method of evaluation we have included an excerpt of Manuel Zymelman's review of the production function process and the accompanying caveats to its potential in determining efficiency factors in educational systems.

2.1 Production Function Analysis*

A production function analysis is a schedule or table showing different combinations of inputs that will yield different outputs; the quantity of outputs produced is a function of or dependent on the quantity of inputs used: $y=f\ (x_1,+x_2,+x_3,+\ldots x_n)$ where y is the measure of educational output or performance and x_1, x_2, and x_3 are measurements of inputs (characteristics of students, teachers, buildings and materials) and f is a mathematical function relating the x to the y. To derive the relationship multiple regression analysis is used; coefficients indicate the incremental

*extract from: Financing and Efficiency in Education, Manuel Zymelman, 1973.

effect of a unit of change in an input on the output.

The caveats to this process as a predictor of internal efficiency are:

1. The technique does not test causality because the equation does not derive from learning theory.

2. Most of the variables are proxy variables: teacher salary as an indication of teacher quality, for example.

3. There is a tendency toward aggragate analysis of heterogeneous data which is not specific enough for regional or local analysis or recommendations.

4. Staistical analysis with many socio-economic variables always has the danger of multicollenarity when independent variables are highly correlated; as a consequence there is no way of knowing the accurate influence or weight of influence of individual variables, or th causal relationship between independent and dependent variables.

Despite the limits of this method of analysis it remains the most widely used method of determinig internal efficiency factors in educational systems. Whenever interpretting the data from these analyses it is important to remember the limitations of the analytical form. With this in mind the paper turns to the symptoms of inefficiency as described in the literature, found within the primary education systems in Africa.

2.2 Internal inefficiency: What are the symptoms?

The most frequently cited symptom of internal inefficiency is drop-out/repeater rate in the primary school cycle. It is important for a clearer understanding of the term and exactly what it indicates, to define in disaggregate categories repeater and drop-out rates. Drop-outs can be defined in five descriptive categories:

1. permanent drop-outs: those students whose choose not to re-enter the formal school cycle after dropping out in the middle or at the end of the school year and/or cycle.

2. repeater drop-outs: those students who do re-enter the school cycle after having dropped out.

3. drop-out/failure: those students who fail and drop out.

4. drop-out/push out: those students who drop out because of space limitations, familial responsibilities or other reasons unrelated to achievement or classroom performance.

5. drop-outs characterized by when they leave the school system: either end-of-cycle drop-outs, end-of-year drop-outs or mid-year/cycle drop-outs.

Repeaters can also be divided into three descriptive categories:

1. Repeater/failure: Those students who repeat a grade because of failure.

2. Repeater/ pass: Those students who have passed the year but repeat it for whatever reason; this is most common at the end of the elementary school cycle when access to higher levels of education is restricted and highly competitive.

3.Repeater/drop-out: Those students who drop out and return the next academic year to repeat the grade.

It is also important to situate where drop-out and repeater rates take place within the educational cycle, as pattern variation will have important effects on causal inferences with specific impact on approaches to remedies within the educational system and/or exogenous sources of inefficiencies. UNESCO has recently completed a worldwide survey of drop-out/repeater rates and trends which will give an indication of the magnitude of these symptoms of inefficiency in Africa.

UNESCO Data

A summary of findings: The report provides a quantitative analysis of the magnitude, trends, and patterns of repetition and drop-out in primary and general secondary education. This paper reviews the data for primary school enrollments within the Africa region only. The study included thirty-two African countries.

3.1 Repeater rates: Trends and Patterns:

On the basis of data presented in table 1 the first section of the study examines trends in the level of repetition in primary education. The analysis is limited to the countries for which data were available for five consecutive years. The thiry-two African countries for which such data were available were classified into five groups. Group 1 refers to the Arab States in Africa which we are not including in this review. Group 2 refers to "English Speaking" African countries (the term English speaking is used to designate and distinguish countries which, under colonial rule, were English speaking). Groups 3,4, and 5 refer to "French Speaking" African countries (this term also refers to the language of the former colonial ruler, Portugeuse colonies are also included in this category).

Without the detailed discussion which the UNESCO reports enter into, the data do reveal only small changes in the level of repetition from the mid-sixties to the mid-seventies. There was a relatively clear distinction between English-speaking countries which maintained their relatively low level of repetition, with the exception of Malawi and the Gambia, while French-speaking countries, despite the reduction in the level of repetition, maintained a considerablely higher level of repetition. From the period of 1968 to 1976 the average repetition rate

Table 1.*

Development of the Number of Repeaters in Primary Education Selected Groups of Countries in Africa, Latin America and Asia. Both Sexes.

	AROUND 1968		AROUND 1977		% Change in Number of Repeaters 1968-1977
	Number of Repeaters	As Percentage of Enrolment	Number of Repeaters	As Percentage of Enrolment	
AFRICA					
Group I Algeria(1), Egypt, Libyan Arab Jamahiriya, Morocco, Tunisia	934 588	12.7	1 412 478	13.5	+51.1
Group II Botswana(3), Gambia, Ghana(3), Kenya(3), Lesotho(4)(7), Seychelles(3), Swaziland(2), United Rep. of Tanzania(6), Zambia(2)(7)	195 152	4.2	264 595	3.5	+35.6
Group III Benin, Burundi, Central African Rep.(7), Chad(7), Djibouti(3)(6)	159 211	23.7	254 162	28.5	+59.6
Group IV Ivory Coast, Niger(1), Rwanda(1)(7) Senegal, Togo, United Rep. of Cameroon, Zaire	1 510 966	31.2	1 397 512	19.4	- 7.5
Group V Congo, Gabon(4)(7), Madagascar(7), Mali(1), Upper Volta(7)	375 155	26.6	476 692	22.5	+27.1
Groups I-V Total	3 175 172	16.7	3 805 439	13.4	+19.8

(1) 1967 instead of 1968
(2) 1969 instead of 1968
(3) 1970 instead of 1968
(4) 1971 instead of 1968
(5) 1974 instead of 1977
(6) 1975 instead of 1977
(7) 1976 instead of 1977

*UNESCO data

for Africa declined from 24.4% to 22.1%.

The importance of this reduction as a trend should not overshadow the unsettling fact that while the percentage of repetition declined slightly, the actual number of primary school students enrolled increased by 76% between 1965 and 1976. In other words the reduction in the percentage of repeaters was more than offset by the large increase in the level of population enrolled in primary schooling.

As indicated in table 2 despite the decline in total percentage of repeaters enrolled in primary school from 16.7% in 1968 to 13.4% in 1977, the number of repeaters increased by approximately 630,000, from 3,175,172 to 3,805,439, or 19.8%. The developement of the proportion of repetition in the nine English-speaking countries included in group 2 was charactereized by stability or moderate decline (drop from 4.2% to 3.5%), even so the number of repeaters in these ten countries increased by 35% during the same period. For the three groups of French-speaking countires five of the countries in group 3 showed an increase both in the percentage and the number of repeaters during the period measured. For the remaining countries in group 4 and 5, the percentage declined while the number of repeaters enrolled increased by 27.1%.

When the data are disaggregated by year and level of repeater enrolment the data show that the most striking pattern is the tendency for repetition rates to be highest in the final grade of the cycle. This is the case for twenty-eight of the thirty-two countries. Only Zaire, Uganda, and Ghana had the lowest level of repetition in the final year of the elementary cycle. The main feature in the patterns of repetition in the countries reviewed was the magnitude of the repetition rate in grade 1 as compared to the rates in the remaining grades of the cycle. The repetition rate for

Table 2.*

Percentage of Repeaters in Primary Education. Both Sexes.

Country	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
AFRICA														
Arab States														
Algeria	*19.8	20.3	13.1	*12.9	*12.8	12.7	12.5	12.6	12.5	12.5	12.5	12.2	13.0	
Egypt				2.9	4.2	4.5	5.2	5.0	4.8	7.1	6.6	5.1	5.5	8.5
Libyan Arab Jamahiriya	24.7	26.5	*27.1	27.8	25.7	25.7	5.0	7.9	6.3	9.7	16.4	14.5	14.6	14.2
Morocco	27.0	29.4	28.7	30.0	29.9	29.8	29.9	29.3	29.7	29.4	28.1	28.7	27.9	28.2
Sudan					2.0	2.4	2.7							
Tunisia	26.9	*28.0	29.2	25.4	27.5	29.2	29.3	17.0	16.8	17.1	19.3	24.3	21.6	22.1
French Speaking														
Benin	21.9	20.9	18.6	19.0	18.8	17.4	19.1	20.6	17.6	21.2	21.7	*21.3	20.9	17.7
Burundi			19.9	19.3	19.9	21.9	*23.1	*24.3	25.4	24.5	25.6	24.0	25.9	27.2
Central African Rep.	28.6	30.5	29.9	23.3	31.9	28.1	27.7	26.0	32.2	31.2	35.3	31.8		
Chad			31.7	32.9	26.9	27.1	*29.4	*31.7	34.0	36.3	36.8	37.6		
Congo	26.5	26.2	27.8	20.2	24.5	32.6	32.1	30.4	30.8	29.2	26.2	24.7	24.6	24.7
Djibouti						10.7	10.2	15.6	20.1	19.9	18.9			
Gabon							33.1	37.0	34.5	34.7	34.0	33.7		
Ivory Coast	*30.4	29.8	26.2	28.5	29.4	*28.0	*26.6	25.2	26.1	22.9	20.9	19.1	17.8	
Madagascar	28.8	*28.6	*28.5	28.4	28.7	29.0	28.7	31.2	*24.5	17.8	24.4	20.3		
Mali	25.8	26.4	31.5	*26.3	21.1	26.3	29.2	28.2	27.2	*25.0	22.9	23.4	26.5	26.7
Mauritania			18.3	16.0							14.8	13.4	14.5	
Niger	23.2	*23.7	24.2	*22.1	20.0	19.2	18.9	18.6	17.8	16.0	13.1	12.7	12.3	
Rwanda	21.5	23.0	25.1	*26.4	27.8	29.6	27.8	24.2	23.7	21.1	*19.0	16.9		
Senegal	18.1	17.8	20.0	17.0	19.5	19.8	19.2	17.6	*17.0	*16.5	16.0	*15.5	14.9	15.3
Togo				34.0	34.7	33.9	31.6	33.3	35.2	32.9	28.8	28.1	27.8	
United Rep. of Cameroon				32.7	29.8	28.8	28.1	25.9	26.9	26.4	25.1	25.9	18.3	
Upper Volta	17.9	18.2	15.4	10.2	17.7	16.1	17.4	17.5	17.4	17.0	17.5	18.5		
Zaire				33.4	25.2	22.9	23.1	*22.6	*22.1	*21.6	21.1	20.6	20.1	
English Speaking														
Botswana						0.3	0.7	0.9	1.6	2.3	2.9	2.6	2.3	2.0
Gambia			9.4	10.8	11.0	13.5	12.0	13.2	12.8	10.7	10.4	23.9	18.5	15.6
Ghana						3.0	3.3	3.2	2.9	2.7	2.3	2.3	2.2	
Kenya						5.1	5.0	5.0	5.2	*5.2	5.2	6.1	6.0	
Lesotho							19.8	21.6	18.5	5.5	6.0	7.8		
Liberia														11.5
Malawi									17.6	17.1	16.5	17.7	16.0	
Seychelles						0.6	0.5	0.5	*1.2	1.8	1.1	0.4	0.6	0.8
Sierra Leone													15.0	
Swaziland					16.9	10.5	15.3	15.4	13.3	10.4	10.2	10.6	10.5	10.7
Uganda											10.2	11.3		
Un. Rep. of Tanzania				2.4	*2.0	1.6	1.3	1.1	0.9	0.5	0.4			
Zambia					1.8	*1.9	*2.0	2.0	1.9	2.0	2.1	1.7		
Portuguese Speaking														
Guinea Bissau											20.8	18.1		
Mozambique		41.8		36.0				28.0						
Sao Tome & Principe												46.6		

Table 2.1*

Repetition Rates by Grade in Primary Education. Both Sexes. Latest Year Available

Country	Year	GRADES 1	2	3	4	5	6	7	8	9
AFRICA										
Arab States										
Algeria	1976	8.7	10.0	12.7	12.2	13.5	23.0	-	-	-
Egypt	1977	0	12.4	0	13.0	0	27.2	-	-	-
Libyan Arab Jamahiriya	1977	13.9	10.4	12.2	18.3	16.5	19.8	-	-	-
Morocco	1977	26.0	21.9	25.8	29.2	49.4	-	-	-	-
Sudan	1970	0	0	4.2	4.3	3.6	21.8	-	-	-
Tunisia	1977	17.4	16.5	17.2	18.1	27.4	37.2	-	-	-
French Speaking										
Benin	1977	14.8	15.4	20.5	17.1	23.0	41.2	-	-	-
Burundi	1977	24.5	19.0	21.8	26.6	36.0	45.7	-	-	-
Central African Republic	1975	24.7	30.3	30.0	27.6	29.9	52.0	-	-	-
Chad	1975	42.7	32.2	34.7	26.8	32.0	60.5	-	-	-
Congo	1977	28.3	18.1	30.3	26.8	22.1	28.5	-	-	-
Djibouti	1974	3.2	20.7	23.5	20.7	20.1	33.9	-	-	-
Gabon	1975	48.8	33.8	29.6	19.5	20.4	24.2	-	-	-
Ivory Coast	1976	13.6	11.3	11.6	12.9	16.6	48.0	-	-	-
Madagascar	1975	28.8	18.8	24.0	12.2	24.8	-	-	-	-
Mali	1977	25.7	27.8	28.5	27.3	29.5	32.0	-	-	-
Mauritania	1976	13.6	12.5	17.0	20.3	8.9	19.9	35.9	-	-
Niger	1976	4.0	11.6	13.5	13.9	16.1	36.6	-	-	-
Rwanda	1975	23.9	15.7	13.9	14.8	12.8	24.6	-	-	-
Senegal	1977	12.4	12.4	13.2	14.0	15.0	33.5	-	-	-
Togo	1976	36.2	26.8	27.4	22.6	23.6	35.7	-	-	-
United Rep. of Cameroon	1976	24.6	16.7	19.4	14.0	15.6	21.9	-	-	-
Upper Volta	1975	16.3	16.5	17.0	16.3	18.2	39.0	-	-	-
Zaire	1976	23.1	22.2	22.9	20.2	16.8	15.4	-	-	-
Portuguese Speaking										
Guinea Bissau	1975	31.3	20.8	17.6	19.8	66.2	66.3	-	-	-
English Speaking										
Botswana	1977	0.3	0.2	0.3	0.3	0.5	1.1	19.0	-	-
Gambia	1977	16.1	11.0	12.6	12.2	13.1	43.4	-	-	-
Ghana	1976	5.1	2.1	1.6	1.3	1.1	1.0	-	-	-
Kenya	1976	6.1	5.4	4.9	6.3	5.9	7.3	9.3	-	-
Lesotho	1975	10.0	7.0	6.6	5.0	5.2	4.7	17.4	-	-
Malawi	1976	17.1	15.9	14.8	12.0	8.9	10.3	12.8	41.1	-
Seychelles	1977	0.5	0.2	0.4	1.2	0.8	1.8	-	-	-
Swaziland	1977	11.3	8.5	10.1	10.2	12.0	11.2	17.0	-	-
Uganda	1975	12.5	13.4	13.4	12.3	13.4	14.9	3.0	-	-
United Rep. of Tanzania	1974	0.4	0.3	0.3	0.3	0.2	0.3	2.5	-	-
Zambia	1975	0.3	0.4	0.6	2.7	0.6	1.1	3.2	-	-

the final year of the cycle is an indication of students trying to improve their academic standing in order to enter the more selective secondary systems. The difference in the magnitude of the repeater rate in the first year of enrollement is not so straight forward. It was suggested by the UNESCO report that it would be of interest to see what factors, such as the use of mother tongue as a means of instruction, were related to repeater rate.

The report could not provide disaggregate figures for urban/rural drop-out rate because data were not available for any of the sub-Saharan countries.

3.2 Drop-out rates: Trends and Patterns

The second half of wastage in education is drop-out. The point at which cessation of schooling becomes drop-out and hence a problem depends on the structure and objective of the educational system. In developing countries where the stress is generally still on achieving universal primary education, drop-out before the attainment or retention capacity of literacy is achieved, is a matter of considerable concern. The study presents the data as survival of cohorts in primary education, which is the percentage of students enrolled in grade 1 who will eventually reach grades 2,3,4 through the final grade of the cycle. Also referred to as the holding power of primary education, this index allows one to study the educational survival and drop-out by grade. Chart 3 summarizes the results for school years around 1977/78. The complete length of each bar shows the percentage of the age cohort which would have reached grade 4 of primary education while the blank part of the bar shows the percentage which would reach the last grade of the cycle. With respect to Africa the proportion of the cohort dropping-out prior to grade 4 ranged from almost 0 to 61%, the median being 22%. The eighteen countries which had a level of drop-out

Percentage of cohorts starting primary education around 1965/66 and around 1976/77 reaching the final grade of the cycle. Both sexes (countries are ranked in descending order according to survival for the last cohort).

AFRICA	1st Cohort	2nd Cohort	No. of Grades
Gambia	1966	1977	6
Ivory Coast	1965	1976	6
Senegal	1965	1977	6
Morocco	1965	1977	5
U.R. of Tanzania	1967	1974	7
Libyan Arab Jam.	1965	1976	6
Zambia	1968	1975	7
Egypt	1967	1976	6
Niger	1964	1976	6
Botswana	1969	1977	7
Algeria	1965	1976	6
Tunisia	1964	1977	6
C[illegible]o	1965	1977	6
Ghana	1969	1976	6
Mali	1965	1977	5
Togo	1965	1976	6
U.R. of Cameroon	1967	1976	5
Upper Volta	1965	1975	6
C.A.R.	1965	1975	6
Benin	1965	1977	6
Madagascar	1964	1975	5
Rwanda	1965	1975	6
Burundi	1966	1977	6
Chad	1966	1975	6

*UNESCO data

exceeding the median included, in addition to Ginea Bissau, thirteen French-speaking countries and four English-speaking countries. The level of drop-out was particularly high in Malawi, Ginea Bissau and Chad, where more than 55% of the cohort dropped-out prior to grade four. It should also be noted that of the eighteen countries above the median all six Arab states were represented which indicates that the sub-Saharan median would be even lower than 22%. Thus while 90% of the cohort would reach grade 4 in the Arab states, the corresponding percentage would be 81% in the English-speaking countries and as low as 72% in the French-speaking countries.

The study also reviewed drop-out by sex and the results for the African countries surveyed showed no clear difference or pattern of drop-out by sex, with only a tendency for girls to drop-out more than boys in the French speaking countries.

3.3 Combined Effects of Repeater and Drop-out Rates on Wastage

In the previous sections the UNESCO data have reviewed seperately the levels of repetition and drop-out in primary schooling, the study now assesses the total wastage and estimates how much of this is due to repetition and to drop-out respectively. For purposes of statistical measurement the survey defined educational inputs as the financial aggregate of expenditures per student year. An indicator for the measure of output in terms of graduates is the number of student-years used by the cohort to graduate. Employing these definitions the survey defines wastage in education in terms of the number of student-years spent on repetition and drop-out. (As was noted in the UNESCO report the use of the term wastage is not absolute in its meaning with respect to outcomes, because of the relative nature of benefits/outcomes one perceives as coming from educa-

The method permits the calculation of the portion of the total number of student-years used by the cohort which have been "wasted" on repetition and drop-out, as well as distributing the portion between these two factors. Table 4 is self explanatory: the median level of wastage in Africa was 33.7% with the level of wastage generally higher in French-speaking countries than in English-speaking ones. The implication is that if this level is maintained in Africa, that more than one third of the student-year costs for primary education will be absorbed by drop-out and repeater students. Such a level of wastage reveals a serious weakness in the functioning of the educational system. The UNESCO study cautions that low wastage rates as a result of automatic promotion practices in some countries does not necessarily indicate "real" low wastage rates when wastage is viewed in externally efficient terms. The question which must be asked is whether the student is prepared for completion of the cycle and has the student achieved the objects of the educational system. The UNESCO report contends that internally efficient education for those already admitted to school only helps those who are not admitted in cases where it increases the intake capacity of the system. This is not necessarily the only potential outcome however, because the improvement of internal efficiency which addresses the symptoms already defined, will result in a qualitative improvement in the education offered all students under the assumption that quality of education is associated with drop-out and repeater rates in primary education.

As reflected in the wastage rates represented on the chart the vast majority of the African countries wastage is more than 50% repetition. Thus the majority of cost associated with wastage in African countries is tied

Percentage of Total Wastage Spent on Repetition for Cohorts Starting Primary Education Around 1976/77. Both Sexes.

AFRICA	
Zambia	93.3
Ivory Coast	88.6
Morocco	86.0
Senegal	72.6
Togo	71.3
Congo	71.2
Djibouti	68.6
C.A.R.	67.7
Gabon	67.4
Niger	65.4
Guinea Bissau	65.0
Tunisia	61.3
Zaire	61.3
Mali	61.0
Libya Arab Jamahiriya	60.9
Uganda	59.1
Chad	57.7
Upper Volta	55.2
Benin	52.9
U.R. of Cameroon	52.6
Burundi	52.0
Mauritania	51.4
Madagascar	49.2
Algeria	44.6
Rwanda	38.6
Swaziland	33.1
Egypt	32.2
Malawi	29.3
Sudan	25.0
Kenya	19.5
Botswana	17.1
Zambia	15.6
Lesotho	15.2
Ghana	14.4
U.R. of Tanzania	7.8
Seychelles	5.1
LATIN AMERICA	
Guyana	82.3
Uruguay	67.9
Grenada	67.1
Suriname	53.7
Panama	48.2
Ecuador	40.6
Haiti	40.1
Dominican Rep.	39.0
Mexico	38.4
Argentina	37.1
Chile	35.1
Peru	34.9
Costa Rica	34.6
Paraguay	32.8
Guatemala	32.7
Brazil	32.3
Colombia	32.0
Venezuela	30.8
Nicaragua	27.3
Cuba	21.7
Jamaica	18.6
El Salvador	16.8
Antigua	14.8
ASIA & OCEANIA	
Sri Lanka	87.6
Kuwait	84.4
Brunei	84.0
Iraq	77.3
Cyprus	75.7
U.A.E.	68.9
Singapore	67.8
Qatar	67.6
Afghanistan	66.5
Bahrain	65.6
Indonesia	49.5
French Polynesia	48.7
Saudi Arabia	48.7
India	43.8
Syrian Arab Rep.	43.1
Oman	43.0
Iran	41.1
New Caledonia	36.6
Jordan	35.2
Burma	34.9
Kiribati	34.8
Fiji	33.4
Bangladesh	21.6
Solomon Islands	22.2
Thailand	21.6
Norfolk Island	14.5
Philippines	10.8
Bhutan	5.8
Japan	0
Malaysia	0
Hong Kong	0
Korea Rep. of	0
New Zealand	0
EUROPE	
Yugoslavia	84.2
France	84.0
Malta	83.7
Austria	77.9
Switzerland	76.9
Greece	73.4
Germany Fed. Rep.	65.4
Italy	65.2
Netherlands	64.6
Portugal	63.4
Luxembourg	52.3
Poland	46.5
Hungary	34.8
Czechoslovakia	18.5
Bulgaria	13.2
Denmark	0
Norway	0
Sweden	0

*UNESCO data

repetition rates. Two expalnatory notes should be added:

1. All drop-out has been counted as wastage; this implies that drop-out from higher grades of the cycle are very heavily counted. For example a student who drops-out at grade five is recorded as five student-years of wastage.

2. For countries with automatic promotion, all wastage is by definition drop-out. This would indicate that an even greater proportion of wastage can be assigned to repetition in Africa.

3.4 Correlation and Component Analysis of the Data

The UNESCO study also performed correlation and principal component analysis on the macro-data compiled and even though the analyses were somewhat inconclusive because of the nature of the data, they do suggest that: "While the level of drop-out in primary education in developing countries is relatively closely related to overall educational, economic and demographic indicators, this is not the case for the level of repetition . Thus without reading too much into the limited results obtained, we might conclude that while the level of drop-out is quite closely related to economic factors governing the demand for and supply of education, the level of repetition depends more on the factors internal to the educational system, particularly in regard to the conception of learning prevelant in each country and the teaching and evaluation methods used." (UNESCO, 1981, p.128)

4. The Causes of Wastage: The Conventional Wisdom Revisited

If the educational system is not meeting the needs of the student population then what are the internal components that could be contributing to this inefficiency? Teachers are a fundamental some in the literature

would argue, the primary factor, in the level of internal efficiency questions in school systems. What then are the effects of teachers in the internal efficiency question and how do they affect the efficiency of the system? Three simple questions may help to shed some light on the importance of teachers and teaching in internal efficiency evaluations:

Who is teaching? How are teachers teaching? What is being taught?

4.1 Who is teaching

A recent World Bank report conducted by Torsten Husén disputes the well publicized IEA findings which indicated that school and teacher variables had little to do with the success rate of students, rather home background characteristics were of much greater significance. The Husén survey of existing literature and research reviewed fifteen teacher characteristics and their effects on student achievement in less developed countries. The findings are presented below:

The fifteen characteristics included: teacher sex, age, economic status, educational attainment, credentials and certification, ability and achievement, experience, salary, inservice training, expectation of student achievement, teaching methods, absenteeism and punctuality, attitude toward work and career, behavior.

The variables found to be the most significant in affecting student achievement were: 1. teacher ability and achievement: The report showed that these are important teacher qualities for student achievement, especially for the more disadvantaged students. The most thorough studies of this variable indicated that the intelligent and knowledgeable teachers produce high levels of student performance. This variable was measured in several ways in ten of the thirty-two studies included in the survey. Of these, five reported

positive findings, four null relationships and one negative. Husén cites two studies that are of particular importance: the Ryan study (1974) in which seven hundred and ninety-seven second graders in Iran were studied; Ryan concluded that: " High quality teachers have the greatest impact on the more disadvantaged pupils." (Husén, 1978, p. 25) Not only is this finding similar to the other study reviewed by Husén, that of Heyneman and his findings in Uganda, but it is also consistent with the results of the Coleman report. Husén concludes that "While the relationship may not hold across all students especially for the better ones from advantaged backgrounds, it is with little doubt an important factor in the performance of the less advantaged which in LDCs, is a most important consideration." (Husén, 1978, p. 26)

2. Teacher experience: Twelve of the surveyed studies included this variable in their findings. All things being equal it is generally agreed that a teacher gains skills through experience, and that the more experienced teacher is the more successful teacher. Alexander and Simmons, Carnoy, and Carnoy and Thias, concluded that teacher experience contributes to teacher success in primary and early secondary grades, but not in upper secondary grades where more skill and knowledge are required. Using seniority as a measure of experience, Thias and Carnoy found that seniority was a better predictor of examination performance than formal qualifications. They concluded that "Seniority may reflect the beneficial effects of having a stable staff, since older, more senior teachers are less likely to be transferred to other schools, regardless of qualifications." (Husén, 1978, p. 27)

3. Teacher expectation: The Pygmalion Effect: This was described as

effect teacher expectation has on students whereby students conform to the expectations of their teachers. It has been much researched in Western countries, however only four of the thirty-two studies of developing countries reviewed included the measure. All four studies that did include this variable found positive correlation between teacher expectation and increased levels of student achievement. The Philippine Department of Education and Culture study (1976) of fifth and sixth graders reported:" A teacher's evaluation of students is an important determinant of academic performance /and/ as the teacher's evaluation becomes more positive, the student's performance increases above the levels of their own self-esteem." (Husén, 1978, p. 31)

Husén believes that despite the paucity of research data for LDCs, that the results of the four studies conducted in LDCs, in conjunction with the considerable data available for developed countries, that there is a strong argument for the inclusion of this variable as a positive input in raising the performance levels of students. "Although the cumulative evidence from LDCs is mixed, the strongest support seems to confirm the effectiveness of teacher training in maximizing student achievement. There are sound methodological explanations for several studies which have failed to detect training effects. Unfortunately few studies have thoroughly investigated the more subtle factors which may obscure the influence of training. Although it may be that 'untrained or unqualified' teachers may effectively teach some subjects such as reading in first and second grade, the evidence suggests that trained teachers would normally be required to teach more advanced subjects to middle primary grades... Teacher upgrading programs have received little attention in the

literature, but the two studies reviewed in this (Husén) report suggest that such programs are effective." (Husén, 1978, p.38)

Teaching methods which involved instructional television or programmed learning instruction were found to be correlated positively with student achievement. However Husén cautions that the research so far has been limited and thus the findings should be regarded with reservation. The studies do provide furtile ground for further experimentation and development. The major concern should be the developemnt of techniques which are culturally inobtrusive and which draw upon indigenous resources both in terms of language and esthetics, and with regard to methodology.

Husén notes several areas in which further research is necessary, particularly studies to determine the 'threshold effect' of teacher training. How much training is needed and at what levels of training do the benefits derived from training diminish? What are the critical upper and lower thresholds for teacher training at various grade levels? A second area of needed research as noted by Husén is the effects of teaching style on the cognitive and non-cognitive effects on students. In the literature on educational reform, there is frequently noted a need for reform in the authoritarian and rote teaching styles of LDC teachers. The assumption is that teaching styles influence learning outcomes. Research is needed to clarify the effects of teaching style on student achievement. A final question raised by Husén reflects his concern with teacher training as it is conducted in the developing world. At present training follows a traditional Western pattern and as such is "conservative and expensive with respect to local needs and resources." It is therefore necessary to ask what alternative programs might be possible and feasible.

Schiefelbein agrees with this point, he states: "Undoubtedly the decisive element is appropriate training of teachers since conventional training programs have produced teachers that do not accept responsibility even for the failure of normal children." (Schiefelbein in Haddad, 1979, p.34)

In concluding remarks Husén says that because of the implicit assumptions about schooling in the West and in developed countries in general, the relationship between the teacher/teaching variables in previous studies are probably undervalued and thus the conclusions drawn are conservative statements about the gains to students' achievement through the upgrading of teachers in LDCs. (Husén, 1979)

4.2 How teachers teach

The level of quality teaching and the use of appropriate teaching techniques is reflected in the question of how teachers teach. Research results reviewed in the literature point to inappropriate teaching methods and teacher training as alienating to both sudents and teachers in developing countries. African wastage rates exemplify, in part, this phenomenom. The data presented in the study of repetition and drop-out rates correlates rates found in former French and Belgian colonies with those levels of repetition in the educational models of France and Belgium. Both educational systems represented the highest levels of repetition for their respective world regions. The implicit interpretation of this correlation is that the educational practices of France and Belgium continue to have substantial influence in their former colonies, particularly at the pedagogy level.

Husén offers some observations about the ability of educational

techniques to be reallily adapted across cultures. He questions the extent to which the cognitive processes of people from different cultures are shared, citing Gladwins 1970 study of the logical thinking patterns among the Puluwat Islanders in the South Pacific and research by Gay and Cole in 1967 on the mathematic ability of the Kepelle tribe in Nigeria. Gladwin has argued that in contrast to the "psychic unity of mankind and his shared learning processes, differences in substantive knowledge and problem solving abilities represent more profound and fundamental differences in logic and other thought processes, and that these processes are culture-bound." (Gladwin in Husén, 1979, p. 51)

Gay and Cole argue that the difference in test results used to measure achievement in developing countries, particularly standardized tests, can be attributed to cultural specificity of the testing. Their position is based on testing performed of Kepelle students in mathematics using standardized tests and tests developed incorporating culturally specific perceptions of mathematical problems, and the differencial results obtained from the two sets of tests.

Husén interprets these findings in two ways: 1) by upgrading schools and teachers in LDCs greater comparability in test scores could be obtained; or 2) the difference is due to more fundamental cognitive processes and is less amenable to policy intervention without radically changing the cultural context. (Husén, 1979) Other studies suggest a third interpretation of test results and other measurements of achievement. The need is for improvement in the context of curriculum as well as teaching methodology based on indigenous sources of innovation, and less reliant upon the developed world as the only source on pedagogy.

Akinpelu states: " There can be little doubt that complex informal educational systems exist in many traditional societies, through which valued cultural information is transmitted, such as family members, religious leaders, village elders, and peers. In many contexts a teacher who is an outsider to the culture, using materials and techniques which are unfamiliar in a setting (the school) which is equally strange, can experience only limited success." He further observes that " Where as the parents in Western cultures tend to thrust out their children to others to train rather early, in non-literate societies the parents and the family assume greater responsibility in, and spend longer time on, the training of their children."(Akinpelu in Husen, 1979, p. 52)

He cautions that in these societies the teacher is the only source of technology and science and in that capacity he or she should be well trained. By way of further caveat he underlines that schools teach more than technology and in cases where the language of instruction is not a mother tongue, the tendency is to teach Western culture along with technologies.

Other aspects reviewed in the literature which had an impact on teacher inputs to student achievement were the amount of time the teacher spends teaching and teacher attitude toward students and job, as well as school facilities and availability of texts and teaching materials.

4.3 Class size and student achievement

With respect to the issue of class size and the return to students in class size reduction Wadi Haddad conducted a survey of available research. His survey findings showed that there is no definitive conclusion regarding the relationship between class size and different variables in the educational process. It cannot be concluded that an increase in class

size will necessarily lead to a decrease in the level of student academic achievement. Likewise, a decrease in class size does not guarantee an improvement in the social learning environment. It seems, more important than class size, is what the teacher does with the opportunities the size of the class offers for learning. Haddad outlines a series of strategies that potentially would increase the effectiveness of teaching in large classes including the use of assistants and programmed learning techniques. His final point is that the only definitive finding in relation to class size is that of cost: " Expenditures increase dramatically with a decrease in class size due to additional classroom teachers, classroom equipment and materials, and adminstrative services. Since we cannot say at this point whether the additional cost results in additional benefits, it may be more cost-effective to increase modestly class size and to invest the annual savings in areas that prove to be effective such as textbooks, and qualified and motivated teachers." (Haddad, 1978, p. 14)

This conclusion is based on the assumption that class size will reflect a policy decision that results in savings that could then be redirected into teacher training or text supply; however in many cases, the expansion of class size at the primary level is an involuntary decision based upon increased demand and not administrative decision making, resulting in no increased allocations and thus no availability of funds for redirection. On going teacher training could be effected so as to introduce, as Haddad recommends, new techniques to accomodate and benefit from large class size.

4.4 Curriculum as neocolonialism

The content of curriculum in affecting the internal efficiency of

education in LDCs has already been alluded to. There is extensive literature on the cultural aspects of neocolonialism represented in the curriculum of LDC schools, a result of unaltered importation patterns of texts, curriculum and teaching methodology. Altbach and Kelly say: "Educational neocolonialism is not a neat concept that can be convincingly argued in all situations in all Third World countries... it is a combination of historical forces, the perhaps inevitable results of international inequity, and the interests of classes within the Third World. The concept is further complicated by the fact that neocolonialism is, for the most part, voluntary; most Third World nations are dependent on industrialized countries for many aspects of their educational and intellectual existence and have called this dependency neocolonialism because we see it as an integral part of the broad thrust of colonial relations stemming from historical past, and because we see the industrialized nations attempting to maintain this status quo at the expense of independent development in the Third World... Because former colonies are poor and because during direct foreign occupation demand for a certain type of education was stimulated, most Third World countries find that they cannot, without major social revolution, depart from education structures of the past." (Altbach and Kelly, 1978, p. 41)

This type of 'colonialism' is reflected in large part by school texts, the language of instruction, curriculum structure and content, and teaching methods. The combination of these factors results in schools that are detached from the communities they are supposed to serve. Educational choices continue to reflect former colonial curricular decisions with little regard for the objectives and needs of the indigenous population.

Rather than a single agricultural curriculum for the rural sector or other centralized changes, the need is for an indepth understanding of primary curriculum in relation to its cultural context, and the educational and social goals of the community, the region, and the nation. Until such analysis is conducted, curriculum will continue to have little impact on reversing trends in drop-out and repetition rates, which wastes resources and undermines internal efficiency in the system.

The choice of language of instruction, particularly in the primary curriculum is an important area where current policies need to be reconsidered. De facto policies in many African countries have recognized the futility of instruction at the primary level in foreign languages. In most countries however, the official language of instruction remains the former colonial language. Commenting on repetition rates the UNESCO report remarked: "In some multilingual societies, particularly in rural areas, children often have at best a very scant knowledge of the language of instruction when they enter school. Under such circumstances, repeating the first grade may be a necessity in order for them to sufficiently master the language of instruction, a necessary basis to enable full benefit from the teaching in the following grades." (UNESCO, 1980, p.145) Even this statement is optimistic when considering the child from a village in which the language of instruction is not spoken by parents or peers. The opportunity to learn that language is limited to the classroom experience which is one of learning frustration and linguistic isolation. It seems doubtful that simple repetition will facilitate language acqusition. Given this optimistic view it still remains costly and inefficient to continue a practice that results in repetition.

One other area which needs to be evaluated is the cumbersome range of the curriculum often found in African schools. Much of which represents holdovers from the colonial system. To increase efficient learning and resource allocation primary school curriculums should stress basic requirements of literacy and numeracy so that further education can be undertaken or skills training enhanced by mastery of these basic learning tools.

4.5 Efficiency and administration

Administration is mentioned briefly here as another dimension of inefficiency in educational systems in Africa. It is an area that was not well covered in the literature reviewed and needs further definition and study. Some general observations were made in the literature however. Administration at the local level, including routines such as student attendance practices and teacher presence may seem mundane but they are areas of considerable inefficiency in many schools. Questions as to the practices of salary distribution, text and materials acquisition and distribution, maintenance of school property and facilities are all factors in the success of an efficient school. The success of an educational system depends on several levels of bureaucracy and to the extent that these systems are inefficient, those inefficiencies will be mirrored in administrative waste at numerous levels.

National administration must have a capacity to undertake educational planning research and the authority to carry out educational programs that are viewed as necessary. This requires not only trained manpower, but a clear designation of ministerial duties and responsibilities. In many African countries niether the manpower nor the bureaucracy exists to undertake these administrative duties. Frequently the education ministry is a

maze of overlapping responsibilities which hampers efficient administration of school programs.

An example of one of the areas in which administrative inefficiencies can result in costly decisions is the construction of schools and classrooms. Because of fragmentary control and responsibility of school construction building designs and materials selection is frequently not based on sound design research of indigenous building needs and available materials nor on innovative techniques of construction. The involvement of localities which will benefit from the school should be encouraged. In Tanzania and Somalia village self-help projects have built classrooms and teacher housing as one approach to lowering the cost of education;Harambee schools in Kenya are another example, although these schools may turn out to be rather costly to the government when and if state take-over requires national financing.

In conjunction with the building of appropriate schools, the optimal use of these facilities once completed is also an approached to the increased efficiency of school systems that appeared in the literature. Several countries in Latin America, El Salvador, and Ecuador for example, are using double shifts to meet primary education demands; other alternative uses of school buildings include adult education centers and rural village developement centers which attempt to maximize facility and resource use. Whatever the decisions are they require an efficient and well run administration.to effectively implement and support the resulting programs.

Before reviewing some of the strategies for the improvement of efficiency in primary education, the report will discuss the correlate

of internal efficiency, that is the concept of external efficiency.

5. Definition of External Efficiency

External efficiency is a broader definition than internal efficiency in the case of education. It describes the net benefits, lifetime earnings, labor productivity, personal satisfaction accrued to individuals with education. The achievement of the objective of external efficiency implies that the system must produce 'relevant' educational services for its users, and that the different sets of skills and knowledge generated by the system must be effectively used. (El Salvador Education Sector Analysis, 1977)

The relationship between the learning process and educational benefits is not generally direct nor immediate, making the establishment of the benefit-cost relationship difficult. Manzoor Ahmed explains the complexity in this way: "The direct output of an educational activity is made up of learning achievements: Increased knowledge, skills, understanding, and new attitudes/behaviors; the ultimate benefits of education are derived only when learning outputs are put to effective use. It is not the outputs per se but how these outputs are applied and the opportunity for their application which indicates their ultimate benefit. Effective use of the learning outputs is not necessarily a function of the cost inputs of an educational program; and it is affected by a host of factors extraneous to the educational program itself. To the extent that education is an instrumentality for development and increased individual and social welfare, the learning process outputs need to be translated into individual and social benefits through the effective use of these outputs." (Ahmed, 1975, p.75)

The relationship between the benefits derived from an educational

program and the cost inputs is referred to as the external productivity or efficiency of the educational program. Expressed in numerical terms, productivity is the same as the benefit-cost ratio. Internal efficiency is related to the external efficiency of a program although the relationship is not necessarily linear. Ahmed points out that high internal efficiency does not necessarily correlate with high externalproductivity. Assessment of benefit-cost relationships requires the examination of internal efficiency but the assessment results of such an examination alone cannot answer significant benefit-cost questions.

"This concept of the system's external productivity takes into account the fact that the distributional rather than the market considerations predominate in the determination of the system's external productivity at the primary level. The market mechanism does not provide the right kinds of signals to allow decisions concerning alternative social investment. Moreover institutional realities dictate that the political inputs into the decisions are substantial. Decision makers, therefore place emphasis on the attainment of the enrollment objectives that are feasible given the mandate of the current educational development plan. The learning needs are defined in terms of: 1) the socio-economic and cultural background of the systems's users, 2) the national objectives for education, and 3) the anticipated use that individuals will make of the acquired knowledge and skills in their environment." (Ahmed, 1975, p.78)

By way of background to the concept of benefit-cost analysis and external efficiency measures the terms cost and benefit should be defined in some detail.

5. Cost

The costing of an educational program or innovation is not as simple

as it may appear. Coombs and Hallak have provided a guide to the kinds of information needed to effectively estimate, the cost of a program or innovation:

1. total enrollment broken down by levels and types of institution, geographic areas, and by individual grade levels,

2. annual number of graduates from each category of institution,

3. annual number of drop-outs and repeaters, indicated seperately and by type of institution, geographic region and individual grades,

4. total number of teachers, distributed by types of institution and levels, and divided by qualification and salary catergories,

5. total annual expenditures on each level and type of institution, broken down by recurrent and capital cost and by major sub-categories within each of these,

6. a breakdown of annual revenues by source of finance for each main education sector,

7. the ratio of educational expenditures to the GNP and to total public expenditures,

8. the ratio of teacher costs to other recurrent costs

9. the comparative level and composition of unit costs per student in rural versus urban schools,

10. comparative costs per student of day versus boarding schools,

11. comparative costs per student in each level of schooling,

12. comparative costs of fulltime and part-time instruction,

13. the theoretical cost of primary school graduates versus the actual cost per graduate,

14. the relative class size of grades in different types of institutions,

15. indicators of space and equipment utilization (Coombs and Hallack, 1972)

The doubtful availability of this sort of disaggregate data is but one complication of the costing process. Ahmed discusses the difficulty of gaging social cost, both public and private particularly since opportunity cost becomes more and more deceptive as educational systems expand to include segments of the population for whom the monetary market is marginal. Rates of return to educational investment are not at all stable by region or economic standing and thus further complicate the costing procedure of a benefit-cost analysis. (Ahmed, 1975)

When considering cost there are other questions that need to be answered: cost to whom, money costs versus real costs, and the level of private cost, social cost, and public cost for the educational service. Ahmed comments that costs are usually expressed in terms of money, but money is not a very stable measuring rod. The value of money changes over time, so costs can be measured either in current prices or constant prices, and since not all educational resources are traded on the market, the assignment of price is arbitrary. The important factor is that a distinction must be made between money costs and costs in terms of real resources.(Ahmed, 1975)

Within this abbreviate discussion of cost issues we have not discussed hidden costs, full cost versus partial cost, public and private funds and a host of other complications that figure in the estimation of cost. The intention however was simply to give an indication of some of the major components to cost and the complex nature of the term.

5.2 Benefits

With the same intention of hinting at the complexity of the term

a brief discussion of the nature of benefits measurements and the inherent difficulty of quantifying and identifying benefits attributable to education will follow. The very nature of the term benefit is extremely variable in the field of education. It can be characterized as economic in the form of increased earnings, productivity, and employment potential, or in non-economic terms of increased occupational choice, mobility, and greater efficiency in home and work. Benefits can also be characterisized by personal satisfaction, improved self-esteem, or at the community level, by the desireability of a literate community. They can be continuous benefits or cummulative, planned and premeditated, or coincidental, or nonapparent. Precisely because benefits are not all quantifiable and because they are not necessarily immediate or directly attributable to specific educational programs, they are extremely difficult to accurately measure or portray.

It may be useful to look at two of the most common methods of benefits measurement in education so as to illustrate their use and their limitations.

5.3 Rate-of-return analysis*

Rate-of-return analysis is an attempt to quantify benefits and costs and to establish a ratio which indicates a threshold at which further investment in education is no longer of benefit to the consumer at the estimated or projected cost. It can be an extremely sophisticated model attempting to account for many of the variables that have been mentioned above. It remains a favorite method of deriving economic measurements of benefits from educational investment. Within the recognized limits of the process it is helpful as a tool to illustrate some of the economic return to educational

*extract from: Financing and Efficiency in Education, Manuel Zymelman, 1973.

investment, it is however, a limited tool and not the definitive measure of return to educational investment. Zymelman raises some economic caveats regarding the results of rate-of-return analysis:

1. Schooling is not the only determinant of earnings;

2. Do earnings reflect productivity as productivity is an outcome of education in the rate-of-return equation;

3. Can external effects be accounted for in earnings;

4. What should be the value for social discount rates;

5. Are uncertainties and probabilities of unemployment considered in the calculation;

6. Is the wage structure static or is it likely to change over time and in the near future;

7. Are part-time earnings considered in calculating the rate-of-return, and what of non-economic returns such as bartering for housing or food;

8. Are the costs used those of an internally efficient educational operation, or educational system; and

9. Are the benefits being measured explicitly defined as social and/or private.

5.4 Manpower analysis

Another method frequently used to forecast and improve needs projections towards the evaluation of the external efficiency of an educational system is manpower planning. Essentially it is an attempted estimation of labor demands for specific labor skills or levels of education, and the the implicit skills/behaviors that accompany a specific level of schooling. Manpower forecasting has been used frequently to justify educational programs, or the expansion of educational systems to meet expected manpower

needs. Zymelman in his discussion of manpower planning raises the following issues in connection to the potential use and accuracy of manpower projections:

1. There is an underlying assumption that labor cannot be substituted; workers have limited mobility. There is elasticity of substitution in the labor market and in the developing countries that elasticity is an important dimension to the labor market profile.

2. The tenuous relationship between education and occupation, particularly in developing countries leaves the forecasting mechanism vulnerable to error.

3. Shifting and volatile labor markets in economies that are single market dependent also renders the manpower forecast more vulnerable to error.

4. Manpower forecasting in isolation has no cost component and by consequence is not sufficient for educational planning. (Zymelman, 1973)

5.5 External efficiency as a relevant educational system

The fundamental question in educational efficiency is whether the product has any relevance to what Vaizey calls the 'good life'. He is refering to individual and social benefits derived from a literate populace and an educated workforce that is mobile, productive and open to experimentation as a result of education. Vaizey criticizes the fundamental conceptualization behind manpower and rate-of-return analysis which explains income differential via the concept of human capital, in which persons are regarded as walking-talking machines to whom returns are paid in exactly the same manner as in a capitalist society they are paid to the owner of physical capital. He claims this view of the functioning of the economy leaves unexplained the notion of capital and it gives an inconclusive response to the

question of what determines price in the absence of an independently set rate of profit. (Vaizey in Ahmed, 1975)

Ahmed further restricts the usefulness of economic analysis claiming that in isolation it cannot determine the effectiveness and benefits of educational activities. Any claim to precision in the measurement of economic returns to education is bound to reflect a gross underestimation of the difficulties of measurement indicated already, and the overly simple notion of quantified educational inputs and resulting outputs. Furthermore it is based on an assumption of the centrality of economic phenomena, an assumption that bears little relation to the real world particularly the devloping world. (Ahmed, 1975)

Colclough argues that the benefits to schooling which narrow economic approaches fail to capture arise from the interaction effects of schooling upon objectives of various social policies. This is not to argue that the schools as they are presently organized are necessarily the most efficient means of accomplishing there ends; indeed the constraints inposed by existing links between the schools and the formal economy produce considerable distortions and inefficiencies in the learning process. (Colclough, 1980)

Ronald Dore contends that there is a greater gap today between modern culture of the school and the culture of the home and village and that not only is there a growing number of failures, drop-outs and unemployed, but the successes who do get employment are often ill-equiped or poorly motivated to make the contribution to their economy and their country's development that is expected of them. (Dore, in Simmons, 1980)

Brandon Robinson sees the failure to meet the basic needs of the poor

directly reflected in the failure to appropriately analyse the problems. (El Salvador Education Sector Analysis,1977) This failure leads to inappropriate schooling which is, inpart, responsible for high internal and external inefficiency within the schools. Abdun Noor advises that "Some interventions can improve the relevance and efficiency of primary education. Access may be improved by raising the internal efficiency of primary education system, by better use of facilities and by better planning of school locations. Other possibilities for broadening educational opportunities are multigraded and non-graded classrooms, semi-annual entry, and variations in the structure of the first cycle of primary education.

The most promising option however is better adaptation of current practices. China and Sri Lanka have adopted a flexible school calendar to meet such local characteristics as the harvesting season and the availability of nonconventional teachers. India is introducing multiple entry points in the primary grades for the nine to fourteen age group, and also proposes to replicate, in several states, an experimental scheme for primary education of one to two years duration for teenagers. In Nepal, rural children attend literacy classes in the morning and follow a planned program of skill acquisition during the afternoon outside school under the guidance of parents and teachers. In Pakistan, feeder schools run by housewives with at least an eighth grade education supplement primary schools by providing literacy training to a substantial number of children." (Noor, 1981, p. 12-13)

6. Strategies for Efficiency

Patrick Lynch in his interpretation of data and commentary on the findings of the Education Sector Analysis in Ecuador noted that "the special learning

needs of all people are multitudinous. Once the people who are responsible for education see their task as greater than running schools, the vistas for alternative programs become boundless; six years of schooling is only one way for people to learn. The wastage inherent in a system which provides only one alternative, with no way for a person who leaves the track early to get back into it is enormous and unnecessary. Educational policy alternatives are numerous, both with respect to program and to organizational structure. If the school system is to be changed, changes in educational professionals will have to accompany program or structural changes. The most difficult portion of the agenda of change is orienting those responsible for change to the desirability and technique of change." (Lynch in Ecuadorian Elementary Education Sector Analysis, 1975, p. 20 vol VII-2)

Recognizing this fundamental need it is also important to underline the context specific nature of change and the perceived needs that are to be met by change. Just as much of the literature reviewed has cautioned that research findings in the developed world are often not applicable in a development context, neither are efficiency recommendations necessarily applicable across the developing world. Contextual specificity is an important dimension for the development of any strategy to ameliorate the level of efficiency in primary education.

Starting with specific recommendations for improving segments of the educational system identified in the literature as contributors to inefficiency,the review of efficiency improvements will broaden to include inputs that are not limited to educational resources and consider a more macro response to inefficiency.

6.1 Teachers and teacher training

If as the literature has indicated, teachers and their training are two specific areas in which upgrading and general improved delivery of services would greatly enhance efficiency then what are the potential methods of realizing these improvements? Findings in the Ecuador study recommend that teaching quality enhancement be achieved through training programs that improve the pedagogy and teaching methodology, and increase teacher's content knowledge of the subjects they teach (specifically mathematics and science if one follows the recommendations of Thias and Carnoy).

Given this generally recognized need and the often enormous expense incurred trying to implement teacher training programs (a case study of Tanzania's attempts and the consequential costs is detailed in Educational Cost Analysis in Action: Case Studies for Planners), several alternative strategies need to be investigated. Husén states that no program for teacher training and teacher allocation should be designed and initiated without first acquiring a thorough knowledge of the demographic, structural, and cultural context within which the program is to function; and that efforts should be made to increase and improve teachers already in place. (Husén, 1978)

In line with findings mentioned earlier in this paper, whatever the level of teacher training , efforts must be made to improve pedagogy and to displace former colonial teaching techniques which are inconsistent with identified objectives and needs. Every effort should be made to define indigenous methods of instruction which incorporate local and regional priorities and practices.

Much of the failure to date of teacher training programs results from the dependence of such programs on traditional methodology which fails to meet the needs of individual teaching environments that are considerably distinguished from those of developed countries. Teachers must learn to effectively manipulate large class size with limited educational support in the form of texts and materials, and to function in generally less-than-optimal learning environments, with particular regard to classroom facilities and libraries and laboratories.

Strategies for teaching disadvantaged children who come from homes in which parental and peer educational support is negligible must also be developed, because as educational systems expand, approaching their goal of universal primary education, they will increasingly draw from students from the most disadvantaged segments of society. Teaching ill-fed children who often have extensive responsibilities of sibling supervision or farming, outside of their classroom obligations, requires a markedly different pedagogy than that which is practiced in an urban setting or in a developed nations schools. The key to successful teaching and teacher training is not simple expansion, rather qualitative change in the method and context of training, resulting in significantly different pedagogy.

Another area which concerns teacher training methodology is the need to develop teacher awareness of their impact on students, as the literature indicates that teacher expectation and attitude is significantly correlated to student achievement. The problem may stem more from teacher dissatisfaction than from teacher awareness and in the former case job satisfaction is rooted in several related areas. One obvious dimension

of dissatisfaction is the level of salaries and the frequently undependable nature of payment schedules. Given the already high investment in education on the part of most developing governments and the fact that recurrent costs are generally more than 80% teacher salaries, it does not seem feasible to suggest substantial increases. There are other nonmonetary incentives such as subsidized housing and food which could be absorbed through community action especially in rural areas where teacher satisfaction is lowest. The question of regular payment is an administrative problem which will be considered later.

Frequently, however teacher dissatisfaction may be the result of the nature of the teacher selection and training process. Many young teachers at the primary school level have not chosen to be teachers but enter the teaching profession because other opportunities are not available for advanced education or employment. The system of teacher selection should be reviewed. In many school systems academic tracking locks students into pedagogy sections without regard for those students employment preferences. The resulting lack of selection in the process of teacher formation is excessively wasteful because teachers will teach for one or two years in the hopes of re-entering school or seeking other employment. Consequently teacher turnover is high and investment in teacher training is lost.

Research also reviewed for this report showed that teacher experience was a primary success factor in student achievement. With regard to teacher experience it is important to know what the pattern of teacher tenure is in the school system and to review the data that indicates teacher stability within a school or educational system. Not only is rapid and

frequent teacher turnover disruptive at the classroom level but it is destructive to the overall continuity of the school system and its administration. Teacher flight is of greatest concern in the rural sector where recruitment of teachers is difficult and teacher tenure is very short-lived. It has been suggested in the literature that differential pay scales in conjunction with other incentives such as the housing supplements previously mentioned might help to stablize rural teacher populations. Whatever the strategy, which will depend upon the dimensions of the problem in a given locality, teacher experience/tenure needs to be addressed as an important component in teacher quality and the consequent input that teachers have on efficiency.

6.2 Teacher training delivery

Given the high costs and the manpower investment in teacher training, new methods of effective, low cost training must be implemented. There are several projects experimenting with programmed learning in teacher training programs and others with the introduction of peer teaching techniques for use in teacher in-service training programs. The use of educational technologies, especially in countries which already are experimenting with television and radio for education, would be a fruitful area of experimentation in the delivery of teacher training. Emphasis must be on lower cost training which is encouraged to break from the restrictions of traditional methods of the past. The primary school level, where the subject matter is less complex and teaching methods more variable may be the best level at which to initiate innovations.

The introduction of differentiated staffing, the use of teachers and teachers aids in conjunction with specially developed curriculum and/or

technologies is also an intervention which should be investigated. The importance of the decision to introduce an innovation must not overshadow the needs of the educational system. Well informed decisions should be made based on local requirements and educational objectives. Husén states that "future research should not be preoccupied with the question of whether trained teachers make a difference, the question which remains unanswered is how and because of what qualities and in what contexts do teachers make a difference." (Husén, 1978, p.68) The other important unanswered question is what is the teacher training threshold at which benefits to training are no longer significant or cost effective.

6.3 Curriculum content

Just as teachers and their training affect the input in an efficient system, curriculum can substantially influence the level of educational efficiency particularly drop-out and repetition rates. The conflict which exists between the social and intellectual values that are the basis of curriculum imported from the developed world and the requirements of developing nations has been well covered in the literature. Coleman has argued that one of the basic functions of the school is to provide the child with a vicarious experience of the adult world including both social and interactional structures, and the physical world. The curriculum in Africa lacks this basic relevance to it environment. Books, where they exist, are imported and frequently antiquated, and the curriculum itself is geared toward successful completion of exit exams which reflect colonial models.

Curriculum change should concern itself with substantial re-evaluation

of content from a socio-cultural as well as academic perspective. It is essential that educational goals established for schools recognize the importance of curriculum which works toward the fulfillment of educational and social objectives. Once a concerted effort has been made to re-examine curricular content there remains the need for appropriate texts and teaching materials. Without such materials curricular change will be ineffective. The production and/or adaptation of primary school texts should be a priority within the context of curricular change. In conjunction with text development and production, mechanisms for distribution must also be considered so as to make texts available and affordable to the greatest number of students at minimal cost to the school system and the student.

6.4 Technology

Wells book on the role of instructional technology in developing countries reviews a range of education programs which use radio and television technology. Its thrust is to examine the complexities of the introduction of technological innovation within the constraints of educational bureaucracy. Before considering the advantages of successful application of radio and television technology in the classroom it is important to be aware of the pitfalls. Wells defines the following potential problems:

1. Problems created by heavy reliance on foreign aid and personnel are magnified by technology systems.

2. There is no evidence that a technology system will enhance the success rate in reducing drop-out and repetition rates; it is no more or less successful that traditional methods.

3. There is no evidence that it is successful in reducing illiteracy

rates; technology simply reduces the reliance on trained personnel.

4. Technologies proved unacceptable in rural areas because of student and parental conservative expectation and cultural distance between lifestyle and new tachnologies.

5. Teachers view technology as displacing them and reducing their control in the classroom.

6. Large expenditures on technology systems may also add demand for higher teacher salaries.

7. As grade level and exposure to technology increases there is an accompanying decrease in favorable attitude toward the technology.

8. Problems with reception and system malfunction and low or poor levels of maintenance are new administrative headaches.

9. Students are viewed as passive or in a passive learning role with little opportunity to question presentations. (Wells, 1976)

Despite these potential problems technology can be an important mechanism in establishing an efficient educational system. The major advantage of these systems is their ability to rapidly respond to manpower needs and to disperse high quality teaching resources to geographic areas which might normally be deprived. In conjunction with other methods of insrtuction and in teacher training projects radio and television has had some success. World Bank is currently conducting a pilot project in the Philippines: broadcast to teachers for in-service training, and AID has been pilot testing several radio based curriculums also with success. The role for radio and television and satelite technology will be defined by the dimensions of educational requirements and the potential for these technologies to deliver acceptable and cost-effective

services. Ultimately the decision remains with the developing nation and its perception of the advantages versus the disadvantages.

6.5 Automatic promotion and grade retention policies

If repetition rates absorb up to a third of the annual expenditures in primary education why not encourage automatic promotion throughout the primary system, in light of the arbitrary level of retention standards as practiced today in Africa? Haddad questions the basis of retention policy which relies on testing to establish academic success or failure. "Tests , even when properly used and interpreted (which is often not the case) measure a very limited number of educational outcomes, and consequently their results do not justify the determination of educational success or failure. Moreover the results are interpreted to reflect student performance with no reference to school conditions, teacher effectiveness or appropriateness of curriculum." (Haddad, 1979, p. 18)

The results of a survey conducted by the Bangkok Institute for Child Study in 1966 of twenty-five thousand school children concluded that repetition of grades appeared to hold no advantage in raising achievement levels. (Philips, 1975) Reinherz and Griffin (1971), Coffield and Bloomers (1956), and Briggs (1966) found similar results in studies they conducted.

Later studies have shown that in Thailand non-repetition is one of the most important variables influencing scholastic achievement on the national level. Another significant finding which is bornout by the statistics of the UNESCO study is research conducted by Antoun and Abu-Rujeili in 1975 which concluded that repetition in the early grades does not screen low-achievers, but a rather significant proportion of new repeaters

appears in later grades. (in Haddad, 1979)

In summation of the review of studies concerning the effects of grade retention on student achievement Haddad writes:

1. Achievement is influenced by a variety of school-related and out-of-school factors. While school-related variables are weak and not consistentaly important, out-of-school variables and pupil characteristics are consistently significant predictors of achievement. Similarly, failure is caused by factors in the school environment, such as school policy, programs and teachers, as well as by the pupil's socioeconomic background, and his personal characteristics and psychological structure.

2. Promotion decisions are limited to attempted measures of cognitive performance while educational objectives are much broader. Even within such limitation, tests do not provide a valid and reliable criterion to establish the level of knowledge of a pupil or the proportion of pupils that deserve to pass or fail.

3. There is no evidence that grade retention is more effective than grade promotion. On the contrary, when groups under the two practices are compared, promoted pupils usually do better, but both continue to be low achievers. Moreover, neither repetition practices lead to better academic standards nor does automatic promotion lead to a lowering of such standards.

4. Grade retention, not only does not result in pupil recovery, but it has certain negative effects on a pupil's self-concept, attitude towards learning, peer-relations and attitudes of parents of repeaters.

5. Other things being equal, promotion seems to be as desireable if not more desireable than retention. However, automatic promotion

does not change a pupil's rate of learning, improve his chances of success, or remedy the para-academic causes of failure. (Haddad, 1979, p.29-30)

The real issue as defined by Haddad is not one of promotion versus retention but how to improve the level of low achievers, and ultimately how to prevent failure. In light of these findings it may be of considerable savings to African governments to reconsider their promotion policies, (Kenya, Nigeria, Tanzania, and Zambia all practice de jure or de facto automatic promotion for primary grades) and to alter retention practices where they appear to be too excessive and consequently very expensive. The former French and Belgian colonies in Africa may be particularly concerned with this policy change given their high levels of repetition, much, owing to high levels of grade retention.

6.6 Sector strategy

John Simmons's book, The Education Dilemma suugests a tactic that has been employed in Latin America with success. The central hypothesis is that developing countries are over-investing in formal schooling relative to preschool investment in human capital, basically nutrition and early environmental stimulation. The future effectiveness of investment in schooling will depend, to a certain extent, on the present investments in pre-school-age projects. This hypothesis rests on :

1. Growing emperical evidence which shows that children of families of low socio-economic levels tend to score worse in most ability tests.

2. That to a large extent, those low scores are a product of a deficit after birth in environmental stimulation as well as nutritional intake, not genetic deficiencies.

3. That nutritional and health factors have a direct bearing

on the ability of children to store, process and retrieve information they receive in the classroom. Simmons refers the reader to studies by Marcelo Selowsky carried out in Mexico, India, Guatemala, and the Philippines.

4. Future enrollments will increasingly draw children from these lower socio-economic levels; which implies that the future effectiveness of primary schooling will depend on the present policies aimed at boosting via better quality of early environment and nutrition, the ability scores of those children. (Simmons, 1980)

The Ecuador Education Sector Analysis makes a similar point: In reviewing its findings regarding health and health's relationship to schooling, the health status of children determined:

1. The number of days of school attendance; and

2. The level of classroom attention;

3. Malnourished children suffered cognitive disabilities;

4. Because early brain development is a process of protein synthesis and, nutrient deficiency produces damage to the central nervous system.

What are the possible approaches to upgrading rural health and education simultaneously? Coordination between donor projects to establish 'development regions' in the rural sector in which health and agriculture projects would be established in conjunction with education projects is an approach mentioned in the literature. This is also compatible with recommendations to optimize the use of buildings and facilities of schools while enabling radio and other technologies to serve the multiple purposes of instruction in all three domains. The World Bank is currently evaluating pilot projects testing 'extended primary schools'. These model projects assume a variety of forms,

including new and expanded uses of primary school facilities , and the addition of 'practical' subjects to the primary school curriculum. Teachers are given new roles with out-of-school youth and adults, and become in essence community workers. In the Kenya Third Education Project primary schools are to become the central element of village development coordination. The case is the same for a Sudan project in which the primary schools become the village development center dispensing health services and offering courses in agriculture and health science. (Haddad, 1981)

6.7 External inputs to efficiency

Whatever measures are undertaken to improve the internal efficiency of primary education, nothing is accomplished if the products of an efficient system are incapable of finding employment, and are distanced from their physical and cultural milieu, rendering them a nonproductive member of the society. Ahmed states that the ultimate test of efficiency of any program is whether the knowledge, skills, and understanding gained from the educational program have been, or can be put to use to derive the benefits that the program is expected to produce. A conceptualization of the role of the educational program in the paticular development situation indicating the ways that the direct learning outputs can help to achieve the ultimate educational objectives must be a working document for educators, planners, and government ministries involved in the conceptualization, program definition, implementation, and evaluation of education projects.

Ahmed suggests a three step approach to evaluation of the efficiency of an educational program:

1. A broader view of resources and costs needs to be taken to show the true magnitude of costs, including financial, non-monetary and opportunity costs;

2. All cost reducing possibilities should be considered, including alternative educational approaches that can be applied, to achieve substantially the same objectives; and

3. All factors that are exogenous to the program itself should be examined for the affect they may have on the attainment of stated objectives or the efficient use of inputs, and the possibilities of appropriate program modification to account for and accomodate these factors should be included. (Ahmed, 1975)

6.8 Financial Distribution Formulas as a Control Factor

Manuel Zymelman approaches questions of efficiency and the encouragement of economically efficient systems through a series of financial distribution formulas which respond to the efficient management of school systems and the achievement of specific goals through the distribution and allocation of funds. "Increased efficiency can be affected by the methods of distributing funds in an attempt to equalize expenditures per educational unit, equalizing educational processes, increasing participation rates, inducing curricular changes, and reducing the number of drop-outs." (Zymelman, 1973, p.)

In implementation of the allocation of funds as an efficiency inducement, Zymelman questions the continued practice of distributing funds based on fixed or variable amounts per educational unit when that unit is measured by the number of enrolled students, the most common method practiced today. It is unreliable because of it dependence

on enrollment statistics at the beginning of the year which reflect inflated attendance numbers and fail to incorporate drop-out figures or absentee rates. Average daily attendance records, which record daily attendance levels for a set period and divides that number by the number of actual school days, gives a more accurate level of attendance, plus acts as an incentive to reduce drop-out and to encourage teachers attention to students. It also is a disincentive to overcrowding because that may lead to drop-out or absenteeism. This process may be complicated because of the often misadministration of schools, but the idea of tying allocations to some measure of performance and efficiency could be a useful approach.

Zymelman cautions that the allocation of the major portion of recurrent expenditures on a per teacher unit basis as a supplement to, or as a substitute for student unit based allocation may induce inefficient student-teacher ratios as administrators attempt to augment budgets by over-hiring of teachers. The allocation of capital expenditures based on standardized per classroom basis discourages innovative classroom construction and alternative use, relying instead on standardized traditional building design and self-contained classrooms. He recommends the allocation of capital expenditures on a standardized capital cost per student place, the number of students in various categories, such as rural primary students or secondary boarding students, could then be used to determine overall funding requirements for a specific period. This would encourage the innovative use of classroom and facilities, and the development of combination schools. He admits that a potential undesireable political effect would be the discouragement of village level

schools, but this could be overcome by the development of transportation facilities or boarding schools for sparcely populated regions. In this way the amounts of funding made available to schools would be based upon the relative weight given to each of the educational units mentioned above by national, regional, and local goals.

He also provides formulas of distribution aimed at the inducement of curricular change and the achievement of specific goals such as equalizing educational expenditures by region and level. Admittedly however, "financial formulas are no panacea for educational problems. They are only instruments which have definite limitations. Each formula must be supported by safeguards and controls. The advantage of incentive formulas is that local authorities can decide how to spend the money to achieve the formula's goal. The overall problem with these formulas is that the total amount of available funds also limits the effectiveness intended by the particular formula." (Zymelman, 1973, p. 299)

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