Internal Efficiency and the African School

Douglas M. Windham

December 1986
INTERNAL EFFICIENCY AND THE AFRICAN SCHOOL

Douglas M. Windham
(consultant)

Policy Division
Education and Training Department

December 1986

The World Bank does not accept responsibility for the views expressed herein, which are those of the author and should not be attributed to the World Bank or its affiliated organizations. The findings, interpretations, and conclusions are the results of research or analysis supported by the Bank; they do not necessarily represent official policy of the Bank.

Copyright © 1986 The International Bank for Reconstruction and Development/
The World Bank
ABSTRACT

This paper focusses on the importance of efficiency considerations in future attempts to deal with the joint phenomena in many sub-Saharan African states of increasing demands for greater educational access and quality and a decreasing national fiscal capacity relative to these demands. The paper emphasizes the importance of the formal primary educational system as the locus of the current debate. The discussion is divided into three major sections:

(1) A presentation of alternative forms of the internal efficiency concept and its relevance to educational evaluation and planning;

(2) A discussion of the major constraints on efficiency enhancement in education in sub-Saharan Africa; and

(3) A set of proposals for improvement in educational efficiency within the context of these constraints and the available financial and manpower resources.
Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>3 - 10</td>
</tr>
<tr>
<td>THE EFFICIENCY CONCEPT</td>
<td>11 - 17</td>
</tr>
<tr>
<td>OPERATIONALIZING THE INTERNAL EFFICIENCY CONCEPT</td>
<td>17 - 24</td>
</tr>
<tr>
<td>INTERNAL EFFICIENCY IN THE AFRICAN SCHOOL</td>
<td>24 - 33</td>
</tr>
<tr>
<td>CONSTRAINTS ON EFFICIENCY ENHANCEMENT</td>
<td>33 - 63</td>
</tr>
<tr>
<td>1. Political and Cultural Constraints</td>
<td>34 - 36</td>
</tr>
<tr>
<td>2. Manpower Constraints</td>
<td>36 - 40</td>
</tr>
<tr>
<td>3. Instructional Materials Constraints</td>
<td>40 - 43</td>
</tr>
<tr>
<td>4. Facilities Constraints</td>
<td>44 - 47</td>
</tr>
<tr>
<td>5. Incentive Constraints</td>
<td>47 - 50</td>
</tr>
<tr>
<td>6. Attitudinal Constraints</td>
<td>50 - 52</td>
</tr>
<tr>
<td>7. Management Constraints</td>
<td>53 - 55</td>
</tr>
<tr>
<td>8. Infrastructure Constraints</td>
<td>55 - 57</td>
</tr>
<tr>
<td>9. Donor Assistance Constraints</td>
<td>57 - 62</td>
</tr>
<tr>
<td>10. Financial Constraints</td>
<td>62 - 63</td>
</tr>
<tr>
<td>OPPORTUNITIES FOR THE ENHANCEMENT IN AFRICAN EDUCATION</td>
<td>64 - 79</td>
</tr>
<tr>
<td>FROM STRATEGY TO POLICY IN EFFICIENCY ENHANCEMENT</td>
<td>79 - 83</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>84 - 89</td>
</tr>
</tbody>
</table>

TABLES

- SOCIAL AND ECONOMIC INDICATORS FOR SELECTED SUB-SAHARAN AFRICAN NATIONS | 26
- ENROLLMENT DATA FOR SELECTED SUB-SAHARAN AFRICAN NATIONS                 | 28
- SIZE DISTRIBUTION OF CLASSES, GOVERNMENT SCHOOLS, 1981, BY GEOGRAPHIC DESIGNATION AND GRADE LEVEL | 30
ACKNOWLEDGEMENTS

This paper was prepared by Douglas M. Windham, Professor of Educational Administration and Policy Studies and Professor of Public Policy at the State University of New York at Albany. The author wishes to acknowledge the following colleagues who commented on the draft version of the paper: D. Chapman, P. Foster, F. Kemmerer, R. Koff, P. Moock, R. Obudho, and three anonymous reviewers from the World Bank.
Introduction

Since the major development of educational systems began in sub-Saharan Africa in the 1950's, the predominant means of financing the large-scale expansions in enrollments have involved (1) new levels and sources of funding, (2) increased efficiency in the use of available funds, and (3) an acceptance of poor quality of instruction and inequity in the access to education. The dramatic increases in enrollments that occurred in the 1960's and 1970's were financed largely by the first of these three alternatives. Both domestic and foreign aggregate expenditure for education rose in this period and most countries were able to achieve increases in per student expenditures (Wolff, 1985; Eicher, 1985).

However, the economic stagnation for sub-Saharan Africa that began with the international recession of the mid-1970's has now led to a situation where traditional domestic and foreign sources of funding are inadequate to support continued expansion and, in an increasing number of cases, will be unable even to maintain current standards of access or of instructional quality (Tan, et al., 1984). In the last twenty years over 50 million
new students have been enrolled in African schools; however, in the next twenty years approximately 110 million new students will become eligible for enrollment. National educational systems will be hard pressed to meet these new quantitative demands. Without increased efficiency, the possibility for quality improvement is highly unlikely given the resource levels that will be allocated to education.

This pattern of restrained financial resources for education does not suggest a lack of commitment on the part of the individual nations or of the bilateral and multilateral donors. In fact, under fiscal pressure, governments have tended to protect education and the other social services at the expense of the infrastructure and production sectors (Hicks and Kubisch, 1984). However, with most countries already allocating 20-30% of their budget to education, it is unrealistic to expect major new allocations given the competing demands from the other social and economic sectors.

The converging influences of slow economic growth (aggravated first by the oil crisis and more recently by increasing levels of debt repayment obligations) and the high population growth rate (Africa has the fastest growing population in the world) have combined with internal political conditions to produce an educational crisis in most nations that poses both immediate and
long-term problems to the domestic educational planner/administrator and to the international support agencies. Obviously, this general pattern of crisis development hides individually divergent patterns in the forty-two sub-Saharan nations. However, even the current “successes” of Senegal, the Ivory Coast, Cameroon, Botswana, and Kenya represent potential transient conditions; each of these countries faces severe barriers to continuance of its relative economic progress from the immediate challenge of educating its rapidly expanding population and, eventually, from the even more dramatic challenge of employing its citizens in some useful manner.

Thus, the responsibility faced by most sub-Saharan African societies, for at least the remainder of this century, is to make a choice among the three means of financing continued educational development without jeopardizing the nation's future social or economic stability. With most forecasts indicating little new domestic funding other than that required to maintain pace with inflation and, in the more favored nations, with increases in the school age cohort, the choice for policymakers will be between increased efficiency in the use of available resources or the acceptance of declining standards of access, equity, and academic achievement. While in the abstract the choice would appear to be an obvious one, the history of education in sub-Saharan
Africa over the last decade would suggest that policymakers have often been forced to accept quality deterioration in schools as a means of financing aggregate educational expansion. The concern here is not with this option as a short run means to an end (U.S. and Western European nations encountered similar quality versus quantity issues in the last two decades), but with the long term dislocations that an educational expansionist policy can create in a country facing continuing fiscal constraints.

The danger for the African schools is that quality sacrifices made now will not be removed or ameliorated in the near future. In fact, the more rapid the expansion of education the more difficult will become the problem of quality enhancement. As poor facilities are built, undertrained teachers are employed, and inappropriate curricula and instructional materials adopted, the school systems of sub-Saharan Africa will become more inflexible to change and more resistant to quality improvements. At the very least, a short term policy that allows expansion at the exclusion of quality improvements will increase substantially the eventual price of quality enhancement. The major fear is that by the beginning of the 21st century it will be beyond the ability of most African nations to pay that price.
Before proceeding further, some note should be made of the confusion that discussions of efficiency issues generate in all debates over schooling. The confusion is exacerbated in the context of Africa's heterogeneous national systems. In these debates the participants often use the same words while speaking quite different "languages." An example of this is the frequent criticism that "efficiency is not the only goal of education." To the economist, efficiency is not a goal of education but rather a measure of education's success in meeting its goals, given the financial and other constraints imposed on the school or system. However, economists themselves do not tend always to be careful to distinguish between internal efficiency (how well resources are used in producing a school's or a system's desired outputs) and external efficiency (how well the outputs of education satisfy the needs of society). Economists can distinguish which efficiency is meant by the context of the use of the term; many non-economists cannot determine this distinction and the result is a degree of semantic confusion that disrupts policy debate.

A later section of this paper will define the terms to be used here. Given that semantic differences on certain concepts exist even among economists, the purpose is to impose standardization in the use of language only within the confines of this paper.
A second major semantic problem exists in regard to the term "non-economic" as it relates to costs (inputs) or benefits (outputs) of the system. Traditionally, economics as a discipline has been viewed by many of its practitioners as an approach to the analysis of choice. By this eclectic definition all costs and benefits are "economic." However, the common use of the term non-economic has evolved to mean non-financial or non-monetary. In this paper, these latter terms will be used to refer to the sets of qualitative, psychic, or subjective costs and effects of schools and educational systems. Any economic analysis that ignores these non-monetary phenomena risks producing partial, unreliable, and misleading conclusions. This particular semantic confusion has been reinforced by the tendency of some economists to reduce their analyses only to the quantifiable or, even worse, the monetary variables and to ignore or reference only in passing the other variables that cannot be monetarized or, in some cases, even quantified.

This semantic *cum* epistemological diversion before proceeding with the focus of this paper is justified as follows. The purpose of economic analysis applied to schooling is to provide answers and to clarify the questions. In policy debates, the provision of answers often will require going beyond quantifiable phenomena to
more subjective personal, political, or cultural contexts for decisionmaking. The major contribution of economics to the study of schooling to date has been the clarification of what are the proper questions and how one should proceed with finding answers.

The presentation of this paper will begin with a more detailed discussion of the efficiency concepts and the relationship of these concepts to such terms as effectiveness and quality. The development, definition, and role of the various concepts will be presented in terms of their standard use in economics. The discussion will then proceed to the application of these concepts to schools and educational systems. Alternative specifications of the internal efficiency concept will be presented in relation to the following three categories: input measures, process measures, and output measures. Finally, a discussion of measurement and methodological limitations on the use of the internal efficiency concept will be presented. This last discussion will focus on the special data problems encountered by the researcher studying schools in sub-Saharan Africa.

The main body of the paper will deal with the use of the internal efficiency concept in African schools. This paper will focus on the primary and secondary educational systems with a relatively greater emphasis on primary schooling. This special emphasis is justified in that:
(1) the primary school is the institution of greatest and most equitable access to society; (2) the aggregate expenditure on primary schooling represents the major fiscal investment in education for most countries; (3) the literacy and numeracy benefits from primary schooling are the most generalizable schooling outcomes in terms of personal or social development; and (4) the quality of primary school graduates determines the major inputs into all later levels and forms of education. The last point is a critical one: the major constraint on higher levels of learning is the quality of students graduating from the prior educational level. In many parts of sub-Saharan Africa, a large proportion of the secondary curriculum (and in some cases even of the University curriculum) is expended on remediation necessitated by the poor quality of primary schooling.

The main body of this paper will deal with three aspects of the efficiency issue: (1) constraints on efficiency enhancement; (2) opportunities for efficiency enhancement; and (3) recommendations for policy reform in the systems of education and of donor assistance in sub-Saharan Africa. The ambitiousness apparent in this task is moderated by the recognition of the complexity and impermanence of the phenomena being discussed. The goal is to generate a revised and longer term view of the internal efficiency concept and of its role in the development of educational systems in sub-Saharan Africa.
The Efficiency Concept

Internal efficiency in education is often confused with two related but far from identical concepts: school quality and school effectiveness. School quality is probably one of the most diffuse and confusing terms introduced into policy discussions in the last twenty-five years. Depending on the writer, school quality can refer to input measures (aggregate expenditure, per student expenditure, teacher qualifications, availability of facilities, equipment, and materials), process measures (teacher-student interaction, student time-on-task, peer effects, use of facilities, equipment, or materials), and output measures (test scores, promotion/graduation rates, later social or economic success). Educational effectiveness, in contrast, normally is limited to output measures alone. Internal efficiency is the only concept, however, that links inputs to outputs in a systematic fashion. It is possible to have school quality and school effectiveness without having efficient operation of the school. The internal efficiency analysis asks the question of whether more outputs could be achieved given the available inputs or, alternatively, whether fewer inputs could be used in providing the same level and mix of outputs. Thus, the internal efficiency concept is much more inclusive than those of quality or effectiveness and places a strong emphasis on the scarcity of resources and
their appropriate utilization in schooling. It also should be noted that the internal efficiency concept can be adapted to the inclusion of equity and access considerations. The equity and access measures (for example, participation and attainment by sex, size of place, region, or ethnic/racial group) can be included as output measures along with the more common achievement and attainment standards. Such an output definition is especially appropriate at a time when much of the policy debate deals more with the issues of aggregate access and less with the concern for social inclusion of underrepresented populations.

The efficiency concept and its role in the economic analysis of education is best understood within the larger context of economic optimization. All optimization processes involve the maximization of the value of a given phenomenon (that can be either a single item or a set of items) within the existing constraints of the environment. The maximization of profits, the optimization of social utility, and the minimalization of costs are all examples of the generic optimization process.

Economic efficiency is related but not identical to the more commonly understood concept of technical efficiency (as used in the study of physics or mechanics). Both efficiency concepts involve a ratio of
an output or outputs to a set of inputs. In the case of technical efficiency the ratio is stated purely in terms of physical quantities (e.g., bushels per acre or baskets per person-day). Technical efficiency is optimized when one achieves the greatest possible ratio of outputs per unit of inputs. The procedure for dealing with multiple outputs and multiple inputs is conceptually the same even though the mathematics of the solution are a bit more complicated.

Economic efficiency includes all of the issues related to technical efficiency and adds consideration of the value of the inputs and outputs. This addition of values is required for decisionmaking in that the same physical quantities of different inputs may have dramatically different costs and the same physical quantities of outputs may be valued quite differently by those who receive the outputs (consumers). If the technical relationships among inputs and outputs are known, the calculation of the most economically efficient combination of inputs can be derived if one knows the appropriate values to attach to the inputs and outputs.

The major problems faced in applying the economic efficiency concept in practice are: (1) lack of, or disagreement over, values for inputs or outputs and (2) the failure to consider alternative technological approaches. The first problem includes the issues related
to the propriety of using market prices for valuation, the
difficulty of combining individual values into a group
valuation or preference, and the inability to deal with
purely subjective (psychic) benefits and costs. The
second problem is one that, unlike the first, has not
received a great deal of discussion by noneconomists.

In theory, the process for determining economic
efficiency involves three sets of decisions: the mix of
outputs, the mix of inputs, and the technology to be used
in transforming inputs into outputs (Bridge, Judd, and
Moock, 1979). In a case where there is a single output
and a given technology the process of specifying the most
economically efficient mix of inputs is quite easy (if
input values are given). However, unlike the
manufacturing or private service sector, the social
service sector (including government services such as
education) rarely involves choices where outputs are
singular or where the appropriate technology is obvious.
Thus the application of the economic efficiency concept in
the social services sector has had to undergo several
transformations.

At present there are four basic economic efficiency
approaches that are used in public sector decisionmaking:

- Benefit-cost analysis;
- Cost-effectiveness analysis;
- Cost-utility analysis;
- Least cost analysis
Benefit-cost analysis assumes that both outputs (benefits) and inputs (costs) can be stated in monetary terms. Since a common numeraire is used, the calculation of alternative benefit-cost ratios for different technological alternatives is possible. The technological alternative with the largest ratio of benefits to costs is considered the most efficient. Where benefits and/or costs are incurred over more than one time period, the present value of benefit/cost or rate of return approaches may be applied.

Cost-effectiveness analysis is used wherever it is possible to state input but not output values in monetary terms. However, cost-effectiveness analysis still requires that outputs be stated in quantitative terms. In education, such output measures can include test results, retention/dropout rates, attainment levels, numbers or proportion of students employed after graduation, etc.

Cost-utility analysis relaxes the quantification requirements even further. While costs still are calculated in monetary terms, outputs are valued only in the subjective judgment of the decisionmakers. In the case of education, the decisionmaker may be a politician, a bureaucrat, an administrator, a teacher, a student, a parent or parents, or any combination of individuals to whom decisionmaking responsibility has been given. When one moves cost-utility analysis from the case of the
single decisionmaker to that of group decisionmaking the subjective valuation is determined by the voting rules of the group. Even in the case of the single decisionmaker, the subjective valuation of output does not require explicit statement of the relative values of individual outputs in a multi-output situation.

Least-cost analysis involves the lowest level of conceptual sophistication of the analytical alternatives for measuring economic efficiency. It assumes that the desired outputs are given and requires only that evidence be presented that the proposed means of producing the outputs are the least costly of all feasible alternatives. Actually a subcategory of cost-utility analysis, the least-cost approach is used primarily in the determination of project design feasibility when there is a consensus that the benefits of the project justify its existence.

All of the economic efficiency approaches discussed here can be applied to either internal or external efficiency. The subsequent focus of this paper is on internal efficiency issues. This emphasis is taken in full recognition of the reduced relevance of internal efficiency issues when the educational system fails to meet the external needs of society. Within the limits of the internal efficiency discussion, however, it will be possible to indicate several continuing controversies that
exist in application of the efficiency concept to schools and school systems.

Operationalizing the Internal Efficiency Concept

The concept of internal efficiency as applied to education depends upon the input-output paradigm: efficiency exists where the value of educational output is maximized for a given cost of inputs (or where input cost is minimized for a specified value of output). However, attempts have been made in recent years (Thomas, 1977; Kemmerer, 1980; and Monk, 1984) to expand the analysis of efficient educational production beyond this simple model to one that includes the intervening technology by which inputs are transformed into outputs. In the following discussion, measures of educational quality will be reviewed at all three stages of the educational production process: input, technology, and output. However, as was noted earlier the concept of internal efficiency requires a linkage between the output and input measures.

The most common input measure used in the analysis of education has been per student expenditure (or "unit cost" as it is commonly defined). This measure suffers from several methodological limitations as well as measurement problems in the underlying definition of expenditure or enrollment. The best uses for this measure are to compare among nations the willingness to pay for education or to
pay for various levels and forms of education and for comparisons within one country over time and among levels and types of education.

For example Mingat and Psacharopoulos (1985) found that the per capita expenditures on education relative to per capita national product are 2.5 times greater at the primary level and 4.5 times greater at the secondary level in Africa than in other developing nations. Within Francophone sub-Saharan Africa it was found that the per capita expenditure levels for primary education were only 20% of those in secondary education and 4% of those in higher education. The comparable figures for Anglophone nations were 36% and 2%.

Alternative input measures of educational quality include teacher quality (variously defined), availability and quality of facilities, materials, and equipment, and simple utilization ratios such as students per teacher, per class, or per school. There is inadequate space here to deal with the methodological and measurement limits on each of these concepts. These issues have been dealt with expansively in the past (Hanushek, 1977; Simmons, 1975) and more recently have been treated in the special context of developing nations (Fuller, 1985; and Psacharopoulos and Woodhall, 1985). It is sufficient here to note that at best these measures deal with the potential availability of instructional resources and at worst have
little if any connection to the complex interaction of resources that takes place in the classroom.

The second set of quality variables—process measures—are intended to remedy part of the weakness inherent in input-only measures of quality. Examples of process variables are teacher-student interaction, peer influences, student time on task, curricular allocation, and measures of actual utilization of facilities, equipment, and instructional materials. The study of process phenomena is always more costly than that of the quantified input measures and because process analysis is normally dependent on small sample sizes, suffers from questions of generalizability of the findings.

While the process variables may well be better proxy measures for school quality than are the input variables, in isolation the process variables reveal little about either the costs or ultimate outcomes of schooling. If education were solely a consumption process then one could justify slighting the outcomes since, by definition, they would be largely identical to the process phenomena in a service activity such as education. However, to the extent that both individuals and societies view education as primarily an investment activity, continued attention is due to the output side of the school production function.
Many analysts view output measures as the only real measures of school quality; these individuals view all input and process measures as proxies for the actual output of the school or system. However, agreement on the importance of output measures has not been translated into agreement as to which measure or set of measures is most appropriate. The output measures include cognitive, affective, attitudinal, psychomotor, and behavioral dimensions that range from mutually exclusive to jointly produced phenomena.

Such measures as examination achievement, attainment, graduation, and eventual social and economic success have all been used, singularly and in combination, as measures of school quality or effectiveness. In addition, it was noted earlier that access and equity measures could and should be included in any expanded form of the definition of school or school system outputs.

The weakness of the output variables is that while they can measure effectiveness (to what degree a previously stipulated goal is achieved), they are inadequate by themselves to allow for a judgment of efficiency. Many educational interventions (textbook distribution, modularized instruction, radio or television school broadcasts, or computer-based learning) may be effective at improving test scores or some other output measure but still not be efficient in terms of resource

One of the few measures of school quality or effectiveness that has an efficiency dimension is cycle cost (expenditure per graduate of a level or "cycle" of schooling). While the unit cost concept measures only the level of expenditure per student (a measure of efficiency only if having children be students is a goal in and of itself), the cycle cost accepts the idea that an obvious function of education is to prepare graduates. A variety of formulae exist for calculating cycle costs dependent on data availability and quality (Dominiguez-Urosa, 1980).

In most cases, the assumption is made that students who fail to graduate represent only a cost to the system and do not produce any personal or social benefits. More sophisticated models exist to deal with differential valuation of students by levels of attainment.

Another set of efficiency measures are those relating to school attrition and repetition (wastage). These measures assume explicitly that attrition or repetition is a negative aspect of schooling and attempt to use attrition and repetition rates as indicators of inefficiency. The problem is that both phenomena may be appropriate or at least a necessary aspects of an efficient school or school system. For example, as an educational system expands access to poor or rural
populations, attrition rates are likely to increase even if the quality of school services is maintained. A school system may well decide to maximize initial entry into schools as a means of ensuring a minimal educational opportunity for all children. Attrition rates can only be used as a measure of efficiency if one is informed as to the access and equity goals of the system and the nature of the process by which the attrition decision is made. In addition, at higher levels of schooling, selection (forced attrition) may be an explicit process whereby limited school resources are matched with the most appropriate students.

Similarly, repetition within a grade level may be an appropriate instructional strategy for students who have fallen behind their initial cohort. Unfortunately, the nature of attrition and repetition in African schools can too rarely be justified as part of a planned educational strategy. Rather, they are the effects of instruction and examination systems that show little flexibility or adaptability to individual student needs. Thus, while they may be used as measures of school or system inefficiency, one is left to determine on a case by case basis the aspect of the school or system that is the source of the inefficiency.

The weakest linkage between quality and efficiency occurs at the process or technology stage. Normally,
efficiency is defined for a given technology or, in rare cases, for choices among technologies given certain inputs and desired outputs. Only in the last decade have students of efficiency analysis carried their work to the classroom level. Although the methodological problems and time demands are extensive, this new direction offers the greatest opportunity for identifying potential means for increasing internal school efficiency in the long run.

In any deductive epistemological process in policy analysis, seven distinct steps must take place: identification of conceptual determinants and effects; definition and specification of the concepts; operationalization of the concepts; measurement of the operationable variables; analysis of relationships among the variables; interpretation of these relationships; and application (or generalization) of these interpretations to general or other specific cases where the same conceptual determinants and effects exist. The analysis of internal economic efficiency has proceeded with success only to the point of specification of the concept. As the above discussion indicates there is great controversy over the operationalization of the internal efficiency concept and even wider disagreement over the standards for measurement, analysis, interpretation, and generalization.

In the context of sub-Saharan Africa these problems of methodology are magnified by the limitations on
availability and quality of data. Budget definitions vary in nature and inclusiveness; allocation rather than expenditure data may be the only budget figures available; school staff and enrollment data vary by country in terms of such factors as the sophistication of the data collection process and the time of the school year in which the enumeration of staff and student levels takes place. Because of these constraints, much of the current analysis of efficiency in African schooling must be qualitatively inferential. However, wherever possible, an attempt will be made to at least present examples of the quantitative dimensions of some of the problems that are faced by African schools and school systems in attempts to create efficient instructional systems.

Internal Efficiency in the African School

Assuming that a consensus were attained in regard to the issue of measuring internal efficiency, one would face a second major barrier to the analysis of the efficiency of African schools: the enormous variation that exists within and among the national "systems" of schooling in the forty-two nations of sub-Saharan Africa. To even describe some of the sets of schools as part of a school system overstates the degree of coordination and supervision that exists within certain of the nations. In every nation, substantial divergence in the school
environment exists along the dimensions of urban versus rural and developed versus underdeveloped region. In some nations further divergence exists in terms of public versus private education, male versus female education, and secular versus religious education. When one adds to this complexity the \textit{ad hoc} variations caused by cultural traditions (ethnic or otherwise), school administrator and teacher assignments, and a host of other factors it is easy to understand the need for care in describing any example as an average or typical one.

Table One presents current indicators of some aggregate measures of social and economic characteristics for selected sub-Saharan nations. Of the thirty-three nations included one can note extreme variations in aggregate population (even though some of the smallest African nations are not included in this list) as well as population per square kilometer. The variation in estimated gross national product (GNP) per capita (for 1982) is from $80 in Chad and $140 in Ethiopia to $1,180 in the Peoples Republic of the Congo and $2,670 in the Republic of South Africa. Not shown here, however, is the fact that in 1981, 1982, and 1983 per capita GNP declined for Africa at an estimated rate of between 3\% and 4\% for each year. The remainder of Table One indicates the dramatic divergence in inflation rates and in life expectancy levels among the thirty-three nations. As to
<table>
<thead>
<tr>
<th>Country</th>
<th>Population (millions)</th>
<th>Area (thousands of square kilometers)</th>
<th>GNP per capita</th>
<th>Growth rate</th>
<th>Rate of inflation</th>
<th>Life expectancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chad</td>
<td>4.6</td>
<td>1,284</td>
<td>80</td>
<td>-2.8</td>
<td>4.6</td>
<td>7.8</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>32.9</td>
<td>1,222</td>
<td>140</td>
<td>1.4</td>
<td>2.1</td>
<td>4.0</td>
</tr>
<tr>
<td>Mali</td>
<td>7.1</td>
<td>1,240</td>
<td>180</td>
<td>1.6</td>
<td>5.0</td>
<td>9.8</td>
</tr>
<tr>
<td>Zaire</td>
<td>30.7</td>
<td>2,345</td>
<td>190</td>
<td>-0.3</td>
<td>29.9</td>
<td>35.3</td>
</tr>
<tr>
<td>Malawi</td>
<td>6.5</td>
<td>118</td>
<td>210</td>
<td>2.6</td>
<td>2.4</td>
<td>9.5</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>6.5</td>
<td>274</td>
<td>210</td>
<td>1.1</td>
<td>1.3</td>
<td>9.7</td>
</tr>
<tr>
<td>Uganda</td>
<td>13.5</td>
<td>236</td>
<td>210</td>
<td>-1.1</td>
<td>3.2</td>
<td>47.4</td>
</tr>
<tr>
<td>Rwanda</td>
<td>5.5</td>
<td>26</td>
<td>230</td>
<td>1.7</td>
<td>13.1</td>
<td>13.4</td>
</tr>
<tr>
<td>Burundi</td>
<td>4.3</td>
<td>28</td>
<td>260</td>
<td>2.5</td>
<td>2.8</td>
<td>12.5</td>
</tr>
<tr>
<td>Tanzania</td>
<td>19.8</td>
<td>945</td>
<td>280</td>
<td>1.9</td>
<td>1.8</td>
<td>11.9</td>
</tr>
<tr>
<td>Somalia</td>
<td>4.5</td>
<td>638</td>
<td>290</td>
<td>0.1</td>
<td>4.5</td>
<td>9.5</td>
</tr>
<tr>
<td>Benin</td>
<td>3.7</td>
<td>113</td>
<td>310</td>
<td>0.6</td>
<td>4.1</td>
<td>9.6</td>
</tr>
<tr>
<td>C.A.R.</td>
<td>2.4</td>
<td>623</td>
<td>310</td>
<td>0.6</td>
<td>4.1</td>
<td>9.6</td>
</tr>
<tr>
<td>Guinea</td>
<td>5.7</td>
<td>246</td>
<td>310</td>
<td>1.5</td>
<td>1.5</td>
<td>3.3</td>
</tr>
<tr>
<td>Niger</td>
<td>5.9</td>
<td>1,267</td>
<td>310</td>
<td>1.5</td>
<td>2.1</td>
<td>12.1</td>
</tr>
<tr>
<td>Madagascar</td>
<td>9.2</td>
<td>487</td>
<td>320</td>
<td>-0.5</td>
<td>3.2</td>
<td>11.5</td>
</tr>
<tr>
<td>Togo</td>
<td>2.8</td>
<td>57</td>
<td>340</td>
<td>2.3</td>
<td>3.3</td>
<td>11.5</td>
</tr>
<tr>
<td>Ghana</td>
<td>12.2</td>
<td>239</td>
<td>360</td>
<td>-1.3</td>
<td>7.5</td>
<td>39.5</td>
</tr>
<tr>
<td>Kenya</td>
<td>18.1</td>
<td>583</td>
<td>390</td>
<td>2.8</td>
<td>1.6</td>
<td>10.1</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>3.2</td>
<td>72</td>
<td>390</td>
<td>0.9</td>
<td>--</td>
<td>12.2</td>
</tr>
<tr>
<td>Mozambique</td>
<td>12.9</td>
<td>802</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Sudan</td>
<td>20.2</td>
<td>2,506</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Liberia</td>
<td>2.0</td>
<td>111</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Senegal</td>
<td>6.0</td>
<td>196</td>
<td>--</td>
<td>--</td>
<td>1.8</td>
<td>7.9</td>
</tr>
<tr>
<td>Lesotho</td>
<td>1.4</td>
<td>30</td>
<td>--</td>
<td>--</td>
<td>1.9</td>
<td>8.5</td>
</tr>
<tr>
<td>Zambia</td>
<td>6.0</td>
<td>753</td>
<td>--</td>
<td>--</td>
<td>2.7</td>
<td>11.4</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>7.5</td>
<td>391</td>
<td>--</td>
<td>6.5</td>
<td>7.6</td>
<td>8.7</td>
</tr>
<tr>
<td>Nigeria</td>
<td>90.6</td>
<td>924</td>
<td>--</td>
<td>3.3</td>
<td>1.1</td>
<td>8.4</td>
</tr>
<tr>
<td>Cameroon</td>
<td>9.3</td>
<td>475</td>
<td>--</td>
<td>2.6</td>
<td>4.0</td>
<td>14.4</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>8.9</td>
<td>322</td>
<td>--</td>
<td>2.1</td>
<td>2.8</td>
<td>12.4</td>
</tr>
<tr>
<td>Congo, P.R.</td>
<td>1.7</td>
<td>342</td>
<td>--</td>
<td>2.7</td>
<td>4.7</td>
<td>10.8</td>
</tr>
<tr>
<td>Angola</td>
<td>8.0</td>
<td>1,247</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>South Africa</td>
<td>30.4</td>
<td>1,221</td>
<td>2,670</td>
<td>2.1</td>
<td>3.0</td>
<td>12.9</td>
</tr>
</tbody>
</table>

the last, in 1982 three countries (Somalia, Guinea, and Sierra Leone) had average life expectancies at birth of less than forty years.

Table Two presents some comparable educational indicators among the selected sub-Saharan countries. Even given the unreliability of some of the individual statistics, the table presents dramatic evidence of the increase in school participation since 1960. Even in those countries affected most by internal political disturbances (e.g., Chad and Ethiopia) significant progress has been made in the aggregate expansion of the system. Overall, however, the patterns of enrollments suggest the wide range of educational progress on the African continent. This pattern of variation is most dramatic in the statistics on female participation in primary schools.

As noted earlier, the variation in educational conditions are dramatic within individual nations as well. For example, in 1981-1982, variation in primary school enrollment in Somalia, by region, had the following ranges for selected regional characteristics:

- Number of schools: 13 to 133
- Number of classes: 39 to 816
- Classes per school: 2.9 to 14.8
- Total Enrollment: 1,064 to 38,719
- Percent Female Enrollment: 20.8% to 48.5%
- Percent Female Teachers: 6.4% to 56.9%
- Student/Teacher Ratio: 19.7 to 63.0
- Average Class Size: 18.4 to 47.6
- Average School Enrollment: 53 to 704
### TABLE TWO

**Enrollment Data for Selected Sub-Saharan African Nations**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chad</td>
<td>17</td>
<td>35</td>
<td>29</td>
<td>51</td>
<td>60</td>
<td>90</td>
<td>4</td>
<td>19</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>7</td>
<td>46</td>
<td>11</td>
<td>60</td>
<td>3</td>
<td>33</td>
<td>1</td>
<td>9</td>
<td>--</td>
<td>12</td>
</tr>
<tr>
<td>Mali</td>
<td>10</td>
<td>27</td>
<td>14</td>
<td>35</td>
<td>6</td>
<td>20</td>
<td>3</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Senegal</td>
<td>69</td>
<td>90</td>
<td>48</td>
<td>104</td>
<td>32</td>
<td>75</td>
<td>3</td>
<td>23</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Malawi</td>
<td>--</td>
<td>62</td>
<td>--</td>
<td>73</td>
<td>--</td>
<td>51</td>
<td>--</td>
<td>1</td>
<td>4</td>
<td>--</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>8</td>
<td>20</td>
<td>12</td>
<td>26</td>
<td>6</td>
<td>15</td>
<td>1</td>
<td>3</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Uganda</td>
<td>49</td>
<td>54</td>
<td>65</td>
<td>62</td>
<td>32</td>
<td>46</td>
<td>3</td>
<td>5</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Rwanda</td>
<td>49</td>
<td>72</td>
<td>68</td>
<td>75</td>
<td>30</td>
<td>69</td>
<td>2</td>
<td>2</td>
<td>--</td>
<td>1</td>
</tr>
<tr>
<td>Burundi</td>
<td>18</td>
<td>32</td>
<td>27</td>
<td>40</td>
<td>9</td>
<td>25</td>
<td>1</td>
<td>3</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Tanzania</td>
<td>25</td>
<td>102</td>
<td>33</td>
<td>107</td>
<td>18</td>
<td>98</td>
<td>2</td>
<td>3</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somalia</td>
<td>9</td>
<td>30</td>
<td>13</td>
<td>38</td>
<td>5</td>
<td>21</td>
<td>1</td>
<td>11</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Benin</td>
<td>27</td>
<td>65</td>
<td>38</td>
<td>88</td>
<td>15</td>
<td>42</td>
<td>2</td>
<td>18</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>C.A.R.</td>
<td>32</td>
<td>68</td>
<td>53</td>
<td>89</td>
<td>12</td>
<td>49</td>
<td>1</td>
<td>13</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Guinea</td>
<td>30</td>
<td>33</td>
<td>44</td>
<td>44</td>
<td>16</td>
<td>22</td>
<td>2</td>
<td>16</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Niger</td>
<td>5</td>
<td>23</td>
<td>7</td>
<td>29</td>
<td>3</td>
<td>17</td>
<td>--</td>
<td>6</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Madagascar</td>
<td>50</td>
<td>100</td>
<td>58</td>
<td>--</td>
<td>45</td>
<td>--</td>
<td>4</td>
<td>14</td>
<td>--</td>
<td>3</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>44</td>
<td>111</td>
<td>63</td>
<td>135</td>
<td>24</td>
<td>87</td>
<td>2</td>
<td>31</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ghana</td>
<td>30</td>
<td>69</td>
<td>52</td>
<td>77</td>
<td>25</td>
<td>60</td>
<td>5</td>
<td>36</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Kenya</td>
<td>47</td>
<td>109</td>
<td>64</td>
<td>114</td>
<td>30</td>
<td>101</td>
<td>2</td>
<td>19</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>23</td>
<td>39</td>
<td>30</td>
<td>45</td>
<td>15</td>
<td>30</td>
<td>2</td>
<td>12</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Mozambique</td>
<td>41</td>
<td>90</td>
<td>60</td>
<td>102</td>
<td>36</td>
<td>78</td>
<td>2</td>
<td>6</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Sudan</td>
<td>25</td>
<td>56</td>
<td>35</td>
<td>61</td>
<td>14</td>
<td>43</td>
<td>3</td>
<td>18</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Liberia</td>
<td>31</td>
<td>66</td>
<td>45</td>
<td>82</td>
<td>18</td>
<td>50</td>
<td>2</td>
<td>20</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Senegal</td>
<td>27</td>
<td>48</td>
<td>36</td>
<td>58</td>
<td>17</td>
<td>38</td>
<td>3</td>
<td>12</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Lesotho</td>
<td>83</td>
<td>104</td>
<td>63</td>
<td>84</td>
<td>102</td>
<td>123</td>
<td>3</td>
<td>17</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Zambia</td>
<td>42</td>
<td>96</td>
<td>51</td>
<td>102</td>
<td>34</td>
<td>90</td>
<td>2</td>
<td>16</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>96</td>
<td>126</td>
<td>107</td>
<td>130</td>
<td>86</td>
<td>121</td>
<td>6</td>
<td>15</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Nigeria</td>
<td>36</td>
<td>98</td>
<td>46</td>
<td>94</td>
<td>27</td>
<td>70</td>
<td>4</td>
<td>16</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Mozambique</td>
<td>44</td>
<td>107</td>
<td>87</td>
<td>117</td>
<td>43</td>
<td>97</td>
<td>2</td>
<td>19</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Congo, P.R.</td>
<td>46</td>
<td>76</td>
<td>68</td>
<td>92</td>
<td>24</td>
<td>60</td>
<td>2</td>
<td>17</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Angola</td>
<td>21</td>
<td>106</td>
<td>103</td>
<td>163</td>
<td>53</td>
<td>148</td>
<td>4</td>
<td>69</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>South Africa</td>
<td>49</td>
<td>94</td>
<td>--</td>
<td>85</td>
<td>--</td>
<td>15</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

---

Similar patterns could be found in almost any country selected.

In Liberia, for example, only 52 percent of the primary school age cohort was enrolled in 1982/83 (this is a low proportion even relative to the remainder of West Africa). However, the problem is exacerbated by substantial regional imbalances as well as rural/urban disparities in attendance. Enrollments vary among Liberian counties from a rate of 30 percent in Bong County to 73 percent for Sinoe County. Liberia's Second National Development Plan (1981-85) notes that a disproportionate share of qualified teachers are located in the more urban coastal counties and that the availability and quality of primary education is higher in the urban communities.

Table Three indicates the size distribution of classes in government schools by county and grade level, for Liberia in 1981. The data in this table indicate the divergence in class size that exists and the increasing incidence of small classes as one moves up through the primary school grade cycle. For all of Liberia, 57% of first grade classes, 75% of third grade classes, and 81% of sixth grade classes have twenty students or less. Outside Monovia, the capital city, these proportions of small classes increase to 83% at grade one, 91% at grade three, and 95% at grade six. Visits to rural schools suggest that, in fact, the mean of the "less than twenty" category falls in the range of three to eight students.
### TABLE THREE
SIZE DISTRIBUTION OF CLASSES, GOVERNMENT SCHOOLS, 1981
BY GEOGRAPHIC DESIGNATION AND GRADE LEVEL

<table>
<thead>
<tr>
<th>County/City</th>
<th>Grade Level</th>
<th>(No. of Schools)</th>
<th>1-20</th>
<th>21-40</th>
<th>41-60</th>
<th>61-100</th>
<th>101+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monrovia City</td>
<td>Grade 1</td>
<td>(30)</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Grade 2</td>
<td>(29)</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Grade 3</td>
<td>(30)</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Grade 4</td>
<td>(29)</td>
<td>9</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Grade 5</td>
<td>(28)</td>
<td>9</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Grade 6</td>
<td>(23)</td>
<td>2</td>
<td></td>
<td>2</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Montserrado County</td>
<td>Grade 1</td>
<td>(94)</td>
<td>46</td>
<td>27</td>
<td>8</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Grade 2</td>
<td>(95)</td>
<td>58</td>
<td>19</td>
<td>9</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Grade 3</td>
<td>(91)</td>
<td>64</td>
<td>16</td>
<td>7</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Grade 4</td>
<td>(91)</td>
<td>67</td>
<td>15</td>
<td>6</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Grade 5</td>
<td>(83)</td>
<td>56</td>
<td>20</td>
<td>5</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Grade 6</td>
<td>(73)</td>
<td>52</td>
<td>12</td>
<td>4</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Cape Mount County</td>
<td>Grade 1</td>
<td>(35)</td>
<td>25</td>
<td>8</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Grade 2</td>
<td>(33)</td>
<td>30</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Grade 3</td>
<td>(31)</td>
<td>28</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Grade 4</td>
<td>(29)</td>
<td>22</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Grade 5</td>
<td>(24)</td>
<td>17</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Grade 6</td>
<td>(19)</td>
<td>12</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lofa County</td>
<td>Grade 1</td>
<td>(126)</td>
<td>64</td>
<td>39</td>
<td>11</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Grade 2</td>
<td>(124)</td>
<td>88</td>
<td>25</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Grade 3</td>
<td>(119)</td>
<td>91</td>
<td>17</td>
<td>7</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Grade 4</td>
<td>(94)</td>
<td>74</td>
<td>13</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Grade 5</td>
<td>(70)</td>
<td>57</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Grade 6</td>
<td>(53)</td>
<td>44</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bong County</td>
<td>Grade 1</td>
<td>(61)</td>
<td>26</td>
<td>11</td>
<td>10</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Grade 2</td>
<td>(60)</td>
<td>28</td>
<td>14</td>
<td>8</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Grade 3</td>
<td>(63)</td>
<td>35</td>
<td>14</td>
<td>10</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Grade 4</td>
<td>(53)</td>
<td>38</td>
<td>9</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Grade 5</td>
<td>(48)</td>
<td>32</td>
<td>10</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Grade 6</td>
<td>(42)</td>
<td>28</td>
<td>10</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>County/City</th>
<th>Grade Level</th>
<th>(No. of Schools)</th>
<th>1-20</th>
<th>21-40</th>
<th>41-60</th>
<th>61-100</th>
<th>101+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nimba County</td>
<td>Grade 1 (197)</td>
<td>166</td>
<td>52</td>
<td>20</td>
<td>10</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 2 (196)</td>
<td>132</td>
<td>42</td>
<td>13</td>
<td>3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 3 (197)</td>
<td>146</td>
<td>37</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 4 (191)</td>
<td>154</td>
<td>23</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 5 (187)</td>
<td>161</td>
<td>16</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 6 (150)</td>
<td>132</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Grand Bassa County</td>
<td>Grade 1 (81)</td>
<td>54</td>
<td>19</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 2 (79)</td>
<td>65</td>
<td>9</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 3 (74)</td>
<td>63</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 4 (74)</td>
<td>64</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 5 (66)</td>
<td>57</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 6 (61)</td>
<td>55</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Grand Gedeh County</td>
<td>Grade 1 (82)</td>
<td>40</td>
<td>25</td>
<td>11</td>
<td>6</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 2 (80)</td>
<td>54</td>
<td>17</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 3 (79)</td>
<td>59</td>
<td>16</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 4 (76)</td>
<td>60</td>
<td>12</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 5 (61)</td>
<td>47</td>
<td>11</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 6 (51)</td>
<td>41</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Sioue County</td>
<td>Grade 1 (103)</td>
<td>86</td>
<td>10</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 2 (102)</td>
<td>87</td>
<td>11</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 3 (103)</td>
<td>93</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 4 (95)</td>
<td>87</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 5 (82)</td>
<td>78</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 6 (74)</td>
<td>69</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Maryland County</td>
<td>Grade 1 (114)</td>
<td>75</td>
<td>26</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 2 (111)</td>
<td>86</td>
<td>15</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 3 (111)</td>
<td>91</td>
<td>9</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 4 (104)</td>
<td>90</td>
<td>11</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 5 (93)</td>
<td>78</td>
<td>11</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade 6 (89)</td>
<td>72</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

The result of this pattern is not tutorial instruction but multiclass teaching by instructors who often are poorly prepared even for normal classroom responsibilities. The size distribution of classes also acts as a check on the dissemination of alternative classroom technologies that are designed to be cost-effective only for larger class sizes (Windham, 1983).

These patterns of internal variations in educational conditions can be found even in more prosperous societies such as that of Botswana. In 1983, average primary school size ranged from 206 in Ghanzi to 699 in Francistown with an overall average for the school system of 396. The percent of trained teachers varies from 61.9 percent in the North East District to 86.3 percent in Francistown with an overall average of 70.1 percent. Success rates on the Primary School Leaving Examination varied around a national average score of 2.03 (on a 4.0 point scale) with the North West District having an average score of 1.75 and Gaborone (the capital) having an average score of 2.57. Incomplete primary schools exist in ten of the sixteen districts with the North East District having the largest proportion of incomplete schools (9 of thirty-one) and the North West District having the largest number (twelve of forty-six). The point of this digression is that a substantial variation often exists in the reality of the classroom experience faced by students. To
abstract from this reality is a necessary and appropriate
device to allow for the analysis of those factors which
are more common among schools and school systems.
However, the analyst must never lose touch with the
reality of the school environment in moving from the
analytical to prescriptive aspects of policy analysis.

In the sections that follow an explicit assumption
will be made that a priority goal of government is to
improve the operation of its existing educational system.
While the merits and weaknesses of "deschooling" models
will not be reviewed here, it is sufficient to note that
the political and cultural acceptance of the traditional
teacher-centered school model is not such that the model
could be abandoned by most nations even if they had
sufficient financial resources to do so. However, the
following discussions will consider alternative means of
restructuring the classroom within the traditional school
and will identify some specific strategies of intervention
designed to increase instructional efficiency.

Constraints on Efficiency Enhancement

The following section will discuss nine areas of
constraint on the ability of sub-Saharan African nations
to improve efficiency (both internal and external) in
their primary and secondary schools. The purpose here is
to introduce realism (not pessimism) into the discussion
of opportunities and strategies for efficiency enhancement. Too much program and project planning and implementation work has been conducted in the past without proper attention to these constraints. The result has been that hundreds of millions of dollars (both domestic and donor funds) have been expended in the last two decades without accomplishing the joint goals of (1) expanded and more equitable access, and (2) the efficient production of the manpower needed for social and economic development. This initial emphasis on constraints is not a means to discourage further educational investments; rather, it is an attempt to increase the probability of successful intervention in the existing educational systems.

1. Political and Cultural Constraints. Educational systems may be the most conservative social enterprises that exist in developing nations. For all of the rhetoric from the educational extremists of various types, the individual school setting in sub-Saharan Africa is much the same as was the case at independence and much the same as would have been found in Western Europe or the United States in the late 1870's.

In part this may be due to the residual colonialist influence but a more important determinant of the survival of teacher-centered, grade level instruction is the fact that the spread of credentialism outpaced educational
development in Africa in the 1940's and 1950's. As a result, politicians faced strong resistance from both teachers and parents in any attempt to move education away from the traditional forms of instruction and evaluation. As to the latter, the development of national or multi-national examination systems in Africa may have liberated certain of the nations from direct dependence on colonial testing systems but did little more than institutionalize the credentialing process of these systems.

However, it should be recognized that, given the nature of educational administration and supervision in post-colonial Africa, external examinations existed as one of the few means of quality identification, let alone quality control. This implies that the external examination had the potential to be a useful agency for effecting positive change at the classroom level. The major constraints on this potential have been: (1) questions of test validity and reliability; (2) a debate over the range of attributes to be included in the school quality numeraire; and (3) the ability of governments to design and implement corrective and remedial measures where poor classroom performance is identified.

While individual nations have insisted on the need for a unique and locally-oriented curriculum for their schools, the need for internal and external (a major part
of African post-baccalaureate education still takes place outside the continent) standardization has restricted dramatically the ability to innovate in the educational system. Even those nations such as Somalia or Tanzania that engaged in more dramatic experimentation have drifted back to a more traditional educational system.

In addition to this pattern of conservatism relative to dramatic reform, each nation in Africa has faced its own internal political and cultural limitations on the enhancement of educational efficiency. The roles of tribal, ethnic, and religious beliefs in the development of attitudes toward education often have been slighted in educational planning exercises. This indicates a need for the application of social marketing concepts to the attempts to remove social inequities in access to and retention in education.

2. **Manpower Constraints.** Given the political and cultural limitations on educational reform, the single most dramatic constraint on efficiency enhancement is the manpower situation. In the mid-1980's most African nations are still at the beginning of their manpower development activities. Highly qualified manpower remains scarce even where the supply of highly certified manpower is increasing rapidly.

This seeming paradox is actually quite simple to explain. With the acceptance of declining standards (for
admission/and for graduation) the period since 1950 has seen an enormous increase in the quantity of school graduates at all levels. However, the supply of those who actually have the skills commensurate with the traditional standards of a secondary school leaver or university/college graduate has not expanded at the same rate as the apparent increases in demand. As Wiles (1974), Dore (1976), and many successors have pointed out, the mechanisms by which education is transformed into employment and earnings advantages include a variety of mechanisms (credentialism, screening, institutionalization of once-rational practices) that operate even when the person with more education is not a "more-educated" person.

The manpower constraint has an impact on school reform in two basic ways: first, it limits the quantity and quality of individuals available to serve as teachers and, second, it determines the overall management efficiency of society (including supervision and administration of education). In most African nations from 25% to 50% of the primary school teaching force may be unqualified or underqualified. The lack of qualifications may refer to inadequate formal education (some primary school teachers are only primary school graduates themselves) to a lack of pedagogical training, or to deficiencies in both areas. As a result, the average primary school teacher is not prepared to deal with school responsibilities except in a
routine and repetitive manner. The infrequency, brevity, and frequent irrelevance of much inservice teacher training has limited this policy alternative in reducing the instructional impact of poor teacher quality.

Of course, each country has a number of excellent administrators and teachers in primary education and there is less of a personnel quality problem in most secondary education programs. However, it also is true that those schools in rural and poor areas that require the most capable teachers consistently receive the least capable ones.

The issue of teacher salary and assignment policies will be returned to below in the discussion of incentive constraints. It is adequate to note here that there is little in the assignment, pay, and promotion system of most African educational systems to attract highly qualified individuals or to retain and motivate them if they are recruited (in this regard the African experience is different only in degree from experiences in the developed world).

The second manpower constraint relates to management capacity. A shortage of individuals with research, analysis, administration, and supervision skills means that the individual school administrators and teachers receive little effective support from the central or regional offices of the education ministry. Also, there
often is a lack of budget support for transportation and subsistence costs to allow supervisory or inspectorate functions to be fulfilled. As a result increased responsibility for the day-to-day operation of the school often is delegated to individuals unprepared to assume this responsibility. Increasingly, educational planners have come to appreciate the critical role of the school administration in the implementation and monitoring of educational reform and improvement efforts. It is unfortunate that in most of Africa neither the training nor the incentives for school administrators is commensurate with this view of the centrality of their role.

Similarly, the ability of sub-Saharan nations to monitor school quality standards on the input side presupposes the existence of an effective educational management system between the national and the district level and between the district level and the individual school. Without an effective system of instructional support and supervision, quality "control" will be exercised by means of national examination results. Unfortunately, this means of control does not provide the prerequisite information for the design and implementation of remedial activities. The improvement of school and system management capacity is one of the major
requirements for long term improvement in both the internal and external efficiency of the African school.

A different form of manpower problem exists in the areas of science and mathematics instruction. Even qualified primary teachers often have serious inadequacies in these subject areas (and some analysts question whether science can be taught at this level). At the secondary education level, African nations face the same problems as those encountered in the developed nations, i.e., the opportunity costs are so high for anyone qualified in science or mathematics that they rarely become a teacher or, if they do, rarely remain one beyond initial periods of bonding for loans or government subsidies.

3. Instructional Materials Constraints. The discussion of sub-Saharan African schooling as a teacher-centered process often fails to note that for a substantial proportion of the schools the teacher is not only the primary but the sole source of instruction in the classroom. Much of the early literature on instructional materials dealt with the problem of localization of materials and the elimination of European or American ethnocentric biases. Unfortunately, a majority of schools would accept even such materials as these if they could be obtained.

In Liberia in 1983 it was found that a majority of classrooms had few if any textbooks and that nationally
there was only one textbook for every twenty primary school students. In Somalia in 1984 it was determined that a shortage of 2,280,000 textbooks existed relative to what the national curriculum required for primary education. Even in Botswana, a relatively prosperous nation with a geographically concentrated population and good transportation infrastructure, a survey of schools in 1984 revealed shortages of textbooks and delayed delivery of instructional materials as consistent problems for primary education.

There are three distinct problems in the area of instructional materials for African schools: development, delivery, and utilization. The development of instructional materials (including textbooks and instructional support supplies) ideally should be founded on the national curriculum for primary and secondary education. While large amounts of resources have been devoted by donor agencies to curricular reform and design efforts, many nations still operate with little more than a set of generalized objectives and vague goals. Issues of detailed content and sequence, the information most needed by the classroom instructor, are rarely available from the existing curriculum. Even where such detailed curricula exist they often are not widely distributed to the teaching force.
With or without a curricular foundation, instructional materials development is further hindered by the scarcity of experienced indigenous authors, the lack of a manufacturing capacity to reproduce sufficient quantities for national dissemination, and the lack of funds at the district or school level to purchase paper, ink, or other basic supplies. The result is a continued dependence on foreign sources of supply or a prolonged period of materials development activity and an inevitable delay in materials being made available to the classroom.

As serious as the materials development problem may be it often is overshadowed by the problem of distribution. One reason for the consistent inequity between urban and rural populations in educational achievement is that educational materials often are not distributed to the more distant schools. There are geographical, infrastructural, management, and manpower explanations for the distribution problem. Whatever the explanation, a failure to distribute available instructional materials is a source of major systemic inefficiency at the same time that it aggravates the problem of rural-urban and regional inequities.

Of course, a major constraint on the development, production, and dissemination of instructional materials in many African nations has been the existence of multiple languages. With the exception of Somalia, all sub-Saharan
African nations face the problem of multiple languages or at least multiple dialects. The creation of national language policies since the 1940's has done more to disguise than to resolve this problem. Given the urban bias in the use of "national" languages, the issue of the role of local languages in the school curriculum is one whose resolution has had (and will continue to have) dramatic socioeconomic effects on the nature of educational and national development.

Finally, in those fortuitous circumstances where instructional materials actually are made available in the classroom, the problem of utilization remains. Too often the distribution process represents little more than a "materials drop" with teachers acquiring textbooks and instructional supplies but no advance instruction in their use. Without proper training or programmed instruction in the use of the materials provided, the effect of materials supply in the classroom will be minimized. Problems range from teachers who are uncertain about whether or how to distribute the materials to teachers who decide it is simpler to continue their teaching as before and ignore the new materials. Any program of intervention based on the current literature's confidence concerning the efficacy of instructional materials (Heyneman, 1982) must take into account the three aspects of development, distribution, and utilization.
Facilities Constraints. The condition of education in an African school can often be startling to the inexperienced observer. For example, Heyneman (1983) notes that in Malawi in 1979 only one pupil in eight had a chair and only one in eighty-eight had a desk. He comments that:

...walls frequently collapsed after a rain; roofs had large holes; wind and storms disrupted class activity as a matter of course. The normal classroom was dark and stuffy; students sat on the ground, balancing an exercise book or slate on their knees.

A similar environment for students may be found in many parts of sub-Saharan Africa and for some nations represents the modal learning environment in rural areas.

A recent World Bank survey of research (Fuller, 1985) confirmed earlier analyses that examine the role of facilities quality in determining student achievement. While correlations are found between school building quality or availability of special use facilities (libraries and laboratories) and student achievement, these correlations tend to be small and of questionable significance. While some minimum facility quality undoubtedly is required in most environments, and there is a persuasive case to be made for facilities quality as a constraint on school learning, there is no similar case to be made, intuitively or statistically, for facilities construction as a major vehicle for efficiency enhancement.
The status of facilities utilization is a more critical issue than the simple availability of schools built to Western standards. The availability problem can be dealt with in the short run by adaptation of facilities designed for other purposes. The 1978 National Education Survey in Liberia found that 43% of the schools were operating in facilities originally designed for other purposes. A significant number of schools already in operation in other countries in Africa are sited in facilities that meet minimal if not optimal structural requirements. Even in a case such as Botswana, where 27% of primary school classes are held outside a formal classroom building, this is not as serious a constraint on learning as it may appear. Given the choice of receiving instruction in an overcrowded, poorly designed building or in the open air, many teachers and students will choose the latter where climate and custom permit this alternative.

The question is not whether there is a shortage of facilities given Western standards. Obviously such a shortage does exist in both urban and rural environments. The relevant efficiency issue is whether construction of an improved facility will, ceteris paribus, enhance learning. Given that the ceteris paribus conditions often include unqualified teachers, little if any instructional materials, and no clearly disseminated curricular format, the skepticism toward facilities development as a solution
to the inefficiency and poor quality of education appears justified.

The irony here is that facilities development has been the major single focus of bilateral and multilateral assistance to education in sub-Saharan Africa over the last quarter-century. This assistance, even where it has been used effectively for new school construction, has aided and encouraged the quantitative expansion of schooling at the same time that significantly less attention has been directed to the internal classroom operations of either the existing or new schools. Only if one accepts a singular goal of providing wider access to poor quality education can these narrowly-based facility development projects be countenanced as an appropriate assistance strategy.

In recent years facilities programs have responded to some of the common criticisms of these endeavors. Many of the examples of new school construction incorporate low-cost designs, use of local materials, and a low-maintenance requirement. Even at their best, however, facilities programs create a preferable precondition to efficiency enhancement but do not qualify as a sufficient (and perhaps not even necessary) precondition.

The long-term solution to the facilities problem is going to require a mobilization of local rather than national or international resources (as has been done in
Mali and Guinea and is now being expanded in other countries). Such a policy shift will involve loosening or abandonment of national construction standards and the possibility for continued differences or even inequities in facilities quality among regions or individual schools. However, a locally-oriented responsibility for school construction and maintenance would promote efficiency by increasing the number of schools that meet at least the minimum standards required of facilities. In addition, such a reorientation of responsibility would free other funds to be used for more direct means of enhancing quality and efficiency.

5. Incentive Constraints. The systems of primary and secondary education in sub-Saharan Africa exist within sets of complex configurations of incentives. These incentive sets range from the employment and wage or salary incentives of the national labor market to the specific behavioral incentives that affect teacher and student performance in the classroom (Windham, 1980).

Two major problems exist relative to incentive effects in education: first, do planned incentives have their desired effect and, second, do unintended incentives exist that promote counter-productive behavior? An example of the first problem exists in terms of the paucity of information available to the student, family, and often even to the teacher on labor market requirements for
school leavers. In many cases, even the requirements for advanced academic, vocational, or technical education are unavailable to students and families in making their choices of academic programs.

An example of unintended incentives exists in the bureaucratic system which requires similar or identical pay for teachers regardless of their subject specialization or job location. A failure to provide salary or other incentives to those teachers with skills marketable outside the teaching profession (science and mathematics specialists or vocational/technical craftsmen) will mean that the system will face a continuing shortage of such personnel. A failure to provide salary supplements or other compensation for teachers assigned to rural areas will lead to shortages and/or a rapid turnover of personnel assigned to such schools.

Educational planners need to be concerned with the incentives for individuals to become and remain teachers; in many cases the incentives are stronger to become a teacher trainee than to remain a teacher after the training period is complete. In systems such as that in Cameroon (and common elsewhere in Francophone Africa) a teacher trainee is classified as a civil servant upon admission to the teacher training institute. With training stipend, food, and housing provided while in training, the result is that some trainees face a lower
real income after graduation than before. Furthermore, when the transition to first teaching assignment is delayed because of the bureaucratic appointment and payment process (a transition that takes most of one year in some systems) many graduates find uses for their skills outside the teaching profession. Even where bonding regulations and required periods of service are strictly enforced, one only postpones the inevitable attrition of the best personnel from the teaching force. When able teachers depart from the profession a part of the training investment is wasted and the schools remain without qualified personnel.

One of the most disturbing effects of the incentive structure in education is the convergence of conditions that lead to discouragement of able and motivated teachers. Some of the constraints noted above—facilities, instructional materials, and community attitudes—can impose a harsh burden on a new teacher.

The nature of teacher assignment policies is such that new teachers—who are in the most need of on-the-job support and guidance—frequently are assigned to the most difficult schools. Some new teachers find themselves in single teacher, multi-grade schools in areas where culture, religion, and even diet is dramatically different from their own. The results range from poor motivation to
high absenteeism to outright abandonment of the school by the teacher.

The design of effective incentives for any education system is an evolutionary process (Green, 1980). It requires recurrent review, analysis, and reform. However, with the exception of changes in salary levels, little explicit attention appears to have been paid by planners and administrators to the incentive phenomena as sources of efficiency constraints.

6. Attitudinal Constraints. Schools and school systems in Africa face a special set of constraints in terms of the standards and expectations of administrators, teachers, parents, and students. Each actor in the school process may and probably does view the process in a different manner. The administrators are concerned primarily with issues of stability and quantitative standards of performance; the teachers are concerned primarily with the behavior and academic performance of those students within their direct responsibility; the parents are concerned with the achievement of their child in a relative as well as absolute sense; and the individual pupils present a vast array of personal concerns that are unlikely to be fully congruent with those of any of the other individuals involved in the schooling process.
Birdsall and Cochrane (1982) hypothesized that family perspectives toward schooling were due to three sets of influences. These were household factors (parents' education and income), economic environment factors (school costs, wage rates, returns to schooling), and factors related to what were called "unobserved preferences." These preferences were assumed to be a function of social norms, family structures, and culture.

These preferences become the source of the variation in accepted standards of behavior and academic performance that occur even in a single community school but are a major factor in a national educational system. Part of education's traditional "hidden agenda" has been to bring a greater standardization to the range of attitudes that parents and children have toward schooling and other social processes.

An example of how these preferences and attitudinal factors can act as a constraint is the difficulty of introducing objective evaluation into a community with an explicit hierarchy of social status. The teachers who assign grades based on school performance alone may find themselves under strong pressure from the community elite. The (uneasy) acceptance of meritocratic bases for assignment of social roles that one finds in Western society is not always reflected within the village life of rural Africa.
Attitudinal factors also have a strong deterministic role in how well teachers accept proposed instructional innovations (Benyahia, 1983). In Liberia there has been resistance to the government's experimental programmed learning system for primary education because it greatly increases time demands on teachers. A more dramatic attitudinal effect has been observed in the frequent resistance by teachers to television or radio instructional programs in the classroom.

The incidence of failure of these programs (in terms of dissemination if not experimentation) is due to an inability or unwillingness to appreciate the teachers' strong preference for control of their own classroom and the teachers' fear that the new technology will become a substitute rather than a complement for the traditional role of the classroom teacher. Wells (1976) has noted that:

Teachers often view technology as displacing them and reducing their control in the classroom. Surveys of teacher attitudes have revealed that substantial numbers of teachers have regarded their role as reduced.

The new generation of instructional technology (involving calculators and computers) will face similar resistance if planners and implementors do not include consideration of attitudinal constraints in their strategy for efficiency enhancement.
7. **Management Constraints.** The manpower problem as a source of limitation on management capacity was discussed earlier. In this section, the focus is on the structural and bureaucratic factors that limit efficiency enhancement in African schools. In addition to the shortage of trained manpower, the major managerial constraints on educational efficiency stem from: (1) an inappropriate information and incentive system; (2) the lack of explicit and quantifiable goals; and (3) the state of technological advancement in the area of data management.

Most education ministries operate with a hierarchial decision-making system headed by a minister who is more likely a political official than an educational professional. Most procedural decisionmaking is concentrated at the level of the permanent secretary or director general; this person is normally the senior professional in the system. The nature of information and incentives in the African nations is such that an excessive amount of decisionmaking is placed at the level of the permanent secretary. Among the reasons for this are: (1) the inadequate training and experience of subordinates; (2) the reluctance by subordinates to bear responsibility for decisionmaking; and (3) the desire by senior officials to control even routine ministerial operations. The result of this process is that delays occur, the ultimate decisionmaker is further removed from
the actual event and thus often less well informed than a subordinate decisionmaker would be, and no one is left with time available to deal with the long-term planning concerns that should be the primary responsibility of the senior administrator (Windham, 1982). The problem in sub-Saharan Africa is not that educational systems are hierarchial but that there is not an efficient allocation of authority and responsibility among the levels of the system.

Any management system would suffer from a lack of explicit goals. Accountability requires that both the practitioner and administrator agree as to the desired outcomes of the system. Ministries of education in Africa serve many functions in addition to that of instruction: they are major sources of public service employment, they are the most widely disseminated examples of central government largesse, they may represent a political network of government representatives, they are distribution points for information and propaganda, they are day-care centers for children of the urban employed, and they are centers of community activities. With such a multi-output institution and with no indication of the rates of tradeoff among these outputs and the multiplicity of the specifically educational outputs, the constraint on management evaluation is obvious. The result has been that easily quantifiable factors—number of schools,
number of students, number of teachers, pass rates, attrition/repetition levels, and examination scores—have dominated in the formal evaluation of educational management.

The third facet of management constraint is the state of technological advancement. In most educational agencies the quality of data collection (as rudimentary as that may be) is far superior to the analysis and dissemination of data. At a time when the availability of microprocessing equipment is increasingly affordable, most planning units in Africa continue to work with desk calculators or to wait for infrequent access to mainframe computers. The need for data-based decisionmaking is an obvious one but is restricted by the lack of accuracy and timeliness with which data analysis can be conducted. An additional need in this area is for more and better training of policy analysts in doing iterative provisional analysis of data in the time frames normally encountered in ministry work. Traditional conservative research techniques simply are not always applicable to the time frames allowed for much of the policy work done in government ministries and research support agencies.

3. **Infrastructure Constraints.** For someone who has not had the experience of field work in sub-Saharan Africa the constraint that is easiest to overlook is that of the infrastructure, i.e., the roads, highways, telephones, the
postal systems, and other communication systems that are taken for granted in more developed economies. The nature of the environment in certain sub-Saharan nations is such that a significant number of schools cannot be reached by road vehicles for several months each year because of the effects of seasonal rains and the consequent flooding. The geographic isolation of certain other schools make them difficult to visit at any time during the year.

The condition of roads and highways, where they do exist, are normally such as to require much greater time and energy for travel than for the same distance in a developed nation. Telephone and other telecommunications systems are well developed in cities such as Abidjan and Nairobi but elsewhere, even in the Ivory Coast or Kenya, one will face uncertain availability and unreliable quality of service. In less wealthy nations such as Mali, Chad, or Somalia the telecommunications contacts can be unreliable even in the capital cities.

A special constraint on the use of the new informational technologies involving computers and related equipment is that machines have to be adapted to deal with both power surges and failures. The result is that the cost of installation, maintenance, and operation of such equipment is higher than in Western Europe or the United States. A more generic problem is the lack of a repair
and parts replacement system for all types of equipment from vehicles to computers.

The purpose here is to stress the danger of false assumptions about what can be done in the implementation and administration of educational reform projects. All designs of reform efforts must be predicated on the probability of delays in delivery and communication. Any project involving interaction between central personnel and schools will have to take into account the serious infrastructural barriers that exist in most of sub-Saharan Africa. Project designs in African education have been consistently underfunded for both implementation and evaluation activities. The history of educational projects in Africa is weighted with failures; however, a majority of those failures were caused as much by problems with the implementation design as with the behavioral conception of the projects. Such failures will continue as long as project conception and design are undertaken by individuals unfamiliar with the realities of the African social environment and especially the constraints imposed by the nature of infrastructure in urban and rural areas.

9. Donor Assistance Constraints. To this point the discussion of constraints on efficiency enhancement have concentrated on the indigenous limits within sub-Saharan Africa to attempts at educational reform. It is only fair to direct some attention to the external influences that
have led to some of the barriers to efficiency one encounters. The effect of the colonial heritage was mentioned in passing in an earlier section; in Francophonic Africa, and to only a slightly lesser extent in Anglophonic and Lusaphonic Africa, European systems of education have been adopted. In some cases the adoption has been **ad hoc** and at others complete with curricular standards and examination systems (Watson, 1982). The concern here is not with the oft-stated questions of the ethical propriety of this cultural intrusion but rather with its functional propriety.

Sub-Saharan Africa, operating with per capita income levels comparable to those of the 1800's in most of Europe and the United States, has been expected to mount educational systems nearly contemporary with those of the donor nations. In addition, programs of social inclusion for rural populations, women, ethnic and religious minorities, and the physically and mentally handicapped have been urged on the African nations by representatives of societies that themselves have only begun to deal with these issues. One does not need to be a dedicated student of history to recognize that programs of social inclusion in the West followed rather than inspired the major periods of economic development. In fact, to the extent that the educational inequalities of the 1800's promoted large scale capital accumulation, there is a legitimate
question as to whether the current levels and types of educational expenditure in Africa do not represent restraints on rather than sources of economic development.

Africa is being asked to serve as an experiment to test whether development can occur without the concomitant inequalities that have existed elsewhere in the past. The nobility of this goal is slighted, however, by the fact that since the early 1950's little success has been achieved in either economic growth or social inclusion. As noted earlier, when it has occurred, the social inclusion success has often meant simply that access has been gained to a school experience of marginal, if any, value.

The concern here is less with the strategy of the national leaderships and more with the hypocrisy of the donor agencies. Africa, as has the rest of the developing world, has served as an experimental laboratory for everything from modularized instruction to "lifelong learning." Long run incremental strategies for educational development have been sacrificed to allow for the ad hoc interventions of Western educators. The attention span of domestic politicians and donor administrators has been such that these experiments—many of which had potential for improving school instruction or system performance significantly—were rarely translated into fully disseminated systems. As a result, one educational novelty has succeeded another with little
evidence of an accumulation of experience or wisdom. The facilities emphasis of donors is one of the few examples of a long term orientation in donor policy. While even these activities have been idiosyncratic within individual nations, the attractiveness of facilities projects in terms of finite obligations and visible signs of accomplishment, has made them one of the rare long-term strategies evidenced by most donor organizations.

In addition to the factors mentioned above, the most common characteristic noted in regard to donor behavior is the lack of inter-donor coordination of activities. Although substantial progress has been made in regard to donor coordination in the last five years, the continuing fragmentation of donor efforts has had two major negative effects.

First, the development plan for education in an African nation is less likely to be an intuitively-derived strategy on the part of the host nation's planners and more likely to be a catalog of those activities donors have expressed a willingness to support. Even where a systematic independent educational development plan is produced, the implementation of various parts of the plan soon becomes dependent upon the garnering of donor support. The need for matching funds for donor-assisted activities leaves little domestic capital for support of
other development activities which have not found favor within the donor community.

The second negative aspect of donor fragmentation is the effect of uncoordinated program initiatives on recurrent cost obligations of the host governments. Even with grant contributions and concessionary loan terms the host government often remains burdened by significantly higher cost obligations as a result of donor activities. Increased recurrent cost burdens are a dramatic characteristic of facilities expansion and teacher training initiatives. The latter can be especially problematic in that the host government is left with the cost of continuing the new preservice or inservice training programs while incurring new or increased salary obligations for the teaching force.

The effect of the constraints imposed by donor behavior can be offset in part by a greater exercise of discipline and authority on the part of the host governments. There needs to be a greater willingness to say "no" or, alternatively, for the host government to play a more active role in the design and justification of project activities. Also, increased coordination should not be understood to mean only coordination among the donors but improved coordination with the host government's long term educational plans. Otherwise donor cooperation may be viewed as a conspiracy among the donors.
against the interests of the host nation. The ultimate goal of any truly coordinated program would be to develop a full and equal partnership between the donor community and the host nation to replace the present advisor-client relationship that exists in a majority of sub-Saharan nations.

10. Financial Constraints. The discussion of financial constraints has been left to last in part because they are the most obvious constraints. However, it is more important that it be understood that alleviation of the financial constraints will do little to improve the educational system unless the other aforementioned constraints are dealt with as well. The solution to the educational problems of sub-Saharan Africa is not likely to come—or should it come—simply from more funds being made available. The solution must be found in the more efficient use of the resources already invested in the system. Once efficiency in the use of resources is achieved it will become easier to justify greater resource requests for education and the funds allocated will be assured of having a greater effect on school and school system outcomes. For the last two decades new expenditures have been used to remove or disguise the effect of the school system's inefficient design and operation. In the next two decades efficiency enhancement should become a prerequisite for new allocations of funds.
The debate over new funding versus efficiency enhancement may be moot in most of sub-Saharan Africa for the remainder of this century. The vast majority of the forty-two economies of sub-Saharan Africa do not have the choice of using large new allocations of funds for education. Aggregate economic stagnation combined with increasing demands from other social sectors (especially in the areas of health and population) and from the economic infrastructure will force most nations to choose between increased efficiency or a further qualitative (and perhaps even a proportional quantitative) decline in educational services.

The largest source of funds for education remains the host nation. The largest item of expenditure will remain teacher salary costs. The needs of the society are not served either by increasing the quantity of unqualified teachers or by raising the pay of the existing population of unqualified teachers. Any analysis of fiscal investment alternatives or efficiency enhancement activities must begin with the reality of the teacher-centered classroom process. The challenge for the remainder of this century is to increase the efficiency of the teacher-centered process within the wide range of constraints discussed here.
Opportunities for the Enhancement of Efficiency in African Education.

Given the appropriate conceptual understanding of internal efficiency and an appreciation of the real constraints that exist in sub-Saharan Africa, there remains the question of what, if any, opportunities exist to promote greater efficiency. It was noted earlier that only those individuals who have experienced field work in Africa can comprehend fully the nature of the constraints and appreciate how delimiting the constraints are in terms of policy options.

However, it also should be noted that these same individuals probably are the only ones who can appreciate fully the great potential that exists in the African societies for educational reform and advancement. While variations exist within and among the individual nations, it is fair to generalize that community support for schooling remains strong and parental interest in the school activities of their children continues to be positive. The potential of the students probably is the greatest source of optimism. The present achievements of African pupils have been accomplished under some of the least favorable pedagogical conditions one could imagine. Increased internal efficiency in education will require that the intellectual potential of the pupils be exploited more fully than has been possible in the past. The major
surprise to a researcher on African education is not the incidence of failures of the system but the wide range of successes found among individual schools, classrooms, and students.

At the center of the process linking parental and community support with the intellectual potential of the students is the classroom teacher. Given the nature of classroom facilities, equipment, instructional supplies, curricular design, and educational supervision and administration, the accomplishments of the African teacher are surprisingly impressive. The number of able, highly-motivated teachers is far greater than the incentive structure of the system would appear to justify. However, the result of the plethora of constraints on efficiency in instruction will be, at best, to make quality education an idiosyncratic phenomenon linked to the abilities of individual teachers or, at worst, a steady erosion in quality as the best teachers abandon the profession or regress to the behavior levels of their less motivated colleagues.

Many critics of African education appear to feel there is a need for revolutionary change in schooling in order to salvage the potential of the forthcoming cohorts of students. To the majority of such critics, this revolutionary change should come in an adoption of new instructional technologies utilizing the communication
media (radio and television instruction) or instructional computers (from simple hand-held devices to classroom microcomputer networks). A significant minority of the critics feel the revolution that is needed is simply to provide substantial increases in resource availability to support the traditional interventions in facilities construction, curricular reform, and teacher upgrading. Both groups of critics reject (or ignore) the fiscal realities that exist both in Africa and in the donor nations.

It has often been noted in development that pursuit of the ideal condition can become a barrier to achievement of an improved condition. Too much of the discussion of educational reform in Africa is concerned with the achievement of some ideal (whether it be a deschooled utopia or an idealized Western suburban school environment) that may or may not be irrelevant to sub-Saharan Africa but certainly is unattainable within the foreseeable future. The dire need of the moment is for a strategy for educational improvement by means of increased educational efficiency that can be achieved while awaiting the millennium. As asserted by Psacharopoulos, et. al. (1983) national educational planning is, by its very nature, an incremental activity.

Any strategy for African education should accept as its foundation the belief that basic literacy and numeracy
skills are the fundamental requirements for the promotion of sustainable social and economic development. There is a need for an initial selective investment in the capacity of the educational system at the polar extremes. There is a need to strengthen the central government's policy and planning skills related to the educational system and to provide immediate and direct intervention into the operations of individual classrooms. An emphasis on one of these efforts in the absence of the other would not be futile but would greatly reduce the overall effectiveness to be gained from a synergistic approach. Improved central planning and policy analysis skills eventually should have impacts on the individual classroom. However, in the interim, cohort after cohort of students will continue to be exposed to the present system's inadequate program of instruction. Similarly, a classroom intervention that takes place in isolation from improved central administration of the educational system will be difficult to implement initially and impossible to sustain.

The appropriateness of this bi-polar strategy toward the enhancement of educational efficiency may be seen in that it encourages investments in the reduction of systemic administrative and infrastructure restraints on effective long-term policy implementation while allowing for short-term interventions in schools and classrooms to achieve more immediate gains in educational effectiveness.
and equity. A review of current donor activity in African education reveals a lack of this form of strategic balance in the nature of most bilateral and multilateral projects. Most current projects focus their investments on activities intermediate to the planning/policy level and the school/classroom level. Examples of such project emphases are teacher training support (preservice and inservice), vocational training development, curriculum reform activities, and textbook design efforts. While several donors have projects that deal with either central administration or classroom processes, these activities exist outside of a coordinated, systematic strategy. The collective donor portfolio in sub-Saharan Africa may be described, at best, as an ad hoc set of interventions unrelated to a central, long-term strategic focus and, at worst, as a fragmented and potentially counter-productive approach to the long-term problems and short-term needs of the education sector.

Any new strategic initiative for education in sub-Saharan Africa should meet not only the normal criteria of operational effectiveness and efficiency in resource utilization, but also should be evaluated in terms of how it promotes modification of the donor community's assistance portfolio to an established strategic plan. To promote this outcome it is useful to stipulate the desired characteristics of any new
intervention and to consider the interaction between the intervention and the aforementioned constraints on educational efficiency. The desired characteristics of new educational interventions should include the following:

(1) Minimal effects on the recurrent fiscal obligations of the host governments;

(2) A minimal distortion in the manpower supply available to other social and economic activities;

(3) Incorporation within the initiative of development objectives from other sectors (regional infrastructure, population, health, community development);

(4) An ability to mobilize community and other private sector resources (human as well as financial);

(5) A low level of required supervision and management oversight; and

(6) Generalizability of the intervention to educational systems throughout sub-Saharan Africa.

From consideration of the existing constraints and these six criteria, one may recognize the difficulty of identifying a single intervention that can deal with all of these requirements. While a variety of potential opportunities still might be identified, the following five are proposed as a systematic collection of interventions that would promote efficiency enhancement, respond to the nature of the existing constraints, and maximize satisfaction of the stated criteria. The five proposed activities are:

(1) Development of an enhanced central government capacity for data-based planning and administration;
(2) A systematic review and reform of educational system priorities and incentives in the areas of pay, stipends, and bursaries (conducted within the context of the general civil service structure);

(3) Decentralization of a greater share of the responsibility for school finance and supervision and the development of an improved infrastructure for communication between central and regional educational authorities and the local community schools;

(4) Increased availability of instructional support materials; and

(5) Development and dissemination of cost-effective programmed teaching materials appropriate for use in the existing classroom environments.

The first three of these initiatives concentrate on the planning/policy analysis activities at the central government level (even decentralization is, ultimately, a central government decision). The latter two activities represent school- or classroom-level interventions that can be accomplished in a fairly short period of time given the cooperation of host government decisionmakers (Morgan, 1973; Thiagarajan, 1984).

All five of these alternative forms of intervention have been attempted in some design in the past by selected sub-Saharan nations. The major difference here is in the interrelated strategic approach that would require coordinated and sustained efforts among all five initiatives. Before implementation, all five individual interventions would have to receive detailed analysis and elaboration that is beyond the scope of this present...
paper. However, because the school/classroom interventions represent a more dramatic break with traditional educational reform approaches and relate more to this paper's internal efficiency focus, an attempt will be made here to elaborate on the materials provision/programmed teaching activities. Even this discussion will be only preliminary to the more detailed efforts required of instructional systems design specialists and educational planners that must precede an implementation decision. However, these comments will attempt to indicate how this aspect of the strategy accommodates to the existing structural and behavioral constraints that have been discussed.

The proposed school/classroom initiatives will include two major aspects that will be modified based on the level and nature of development of the schools in a particular nation (or even region if international variations in a nation require this degree of adaptability). The instructional support materials component will be the simpler of the two-part approach. A basic instructional support package will be designed to reflect the scarcity of textbooks and support materials in most classrooms. The content of the package could include a chalkboard and chalk, a set of maps, a dictionary, selected instructional charts (with an emphasis on issues of health, population, agriculture, and language), and any other supplies that
materials specialists feel can be justified. These kits may be provided by donor funding, central government financing, or provided, at cost, to local communities. While, ideally, a kit or package would be available to each classroom, reality suggests that one kit per school may be a more attainable goal at the primary school level in the short run.

The basic content and design of the instructional package could be standardized but it would be preferable to allow for a flexible adaptation of the package to each nation’s or each region’s specific needs and resources. To the extent possible, private sector participation in production and distribution of the kits should be encouraged so as to minimize the administrative burden on governmental agencies and to exploit the efficiency factors found in private sector dissemination schemes.

It is not intended that this basic kit be an alternative to textbook distribution where such distribution is physically feasible and financially affordable. However, the kit must be designed to be useful in the absence of textbooks in the classrooms. Stated simply, the instructional support kit should be designed to have a positive effect on instruction regardless of textbook availability but to have an interactive positive impact where textbooks are available.
The more radical and complex of the two initiatives proposed here is the recommendation of a programmed teaching approach for adoption as a standard instructional device. Programmed teaching may be operationalized in a form as simple as sequentially ordered lesson plans in teaching guides to a fully-modularized instructional program designed to incorporate evaluation, remediation, and enrichment activities in addition to standard instruction. As with the instructional support kit, the standardized versus flexible design of the system is an issue that can be resolved so as to suit the specific requirements of resource availability and the current status of educational development within a given country.

It is asserted here that a programmed-teaching initiative represents the most cost-effective form of classroom or school intervention presently available in sub-Saharan Africa. As was noted earlier, educational costs in Africa are relatively high given the levels of per capita income. The cause of this distortion is not teacher under-utilization (although student-teacher ratios at the upper primary and secondary levels could be increased) or the high input quality provided to the students. The source of this high relative cost is the level of teachers' salaries. While not high by Western standards, the teachers' salaries represent a significant
opportunity cost and a growing fiscal burden to the governments of sub-Saharan Africa.

For a variety of cultural, political, and economic reasons there is no great probability for reducing the continuing expansion of these obligations. With most governments struggling simply to control the rate of expansion, sub-Saharan Africa may be viewed as having developed an educational system that is more costly than it is effective. The present levels of student achievement and attainment in Africa are not sufficient to justify the expanded obligations that will be incurred as the school systems expand to meet the larger age cohorts of the future.

If teacher costs cannot be reduced and if one is unwilling to abandon the present gains in and existing goals for a more socially inclusive educational system, the only alternative is to make more efficient use of teachers. The effectiveness of teachers can be enhanced through increasing teacher quality or altering the process by which the teacher is utilized in the classroom. The promotion of teacher quality has proved to be an elusive goal. Teacher training programs have a stronger record of determinancy in the context of bureaucratic credentialism than in terms of school achievement. Even though teacher training can be effective the costs—both short-term training costs and recurrent salary obligations—limit the
appropriateness of teacher training as a major policy alternative in most countries.

Programmed-teaching materials allow for increased teacher effectiveness without imposing major new recurrent costs on the system. As with any other alternative, programmed teaching materials can be as expensive as one wishes to make them; however, for a dissemination cost of $3 to $5 per teacher per subject area (Windham, 1983a), a basic programmed teacher system can be put into effect in a short period of time. Economies of scale are significant in all materials development, production, and dissemination costs and this should be a factor favoring consideration of standardized use of these materials.

A special aspect of programmed teaching materials is that the materials can be effective with any teacher who possesses the literacy skills to review them and the motivation to use them. Also, while the materials will have their greatest marginal impact on the least qualified teachers they will be designed so as to enhance the performance of even the well trained teachers. Programmed materials will provide the teachers with three main components that are frequently lacking in the classroom process: expanded subject area content, specification of the appropriate instructional sequence, and suggestions for utilization of locally available instructional materials. It is a regrettable fact that a large
proportion (perhaps even a majority) of African teachers must approach the school day with little information on what topics should be covered and in what sequence concepts should be presented. Teacher behaviors—from the use of rote learning techniques to frequent absenteeism—may be viewed, at least in part, as a response to the challenge of organizing each school day's activities based only upon the teacher's own school experiences or the imprecise prescriptions retained from a training course. A major advantage for programmed materials is their ability to promote the proper sequencing of learning activities in the classroom and to help assure appropriate reinforcement and remediation of learning achievements.

Programmed materials have been used successfully in both developed and developing nations (Cummings, 1984). Examples of the latter are Indonesia, the Philippines, Thailand, Korea, Nepal, and Liberia. In most of these cases the materials have been designed for direct student use (programmed instruction) as opposed to teacher use (programmed teaching). While programmed instruction has been shown to be effective in improving student achievement, the quantity of materials required and the management requirement at the classroom and system level both raise the question of its overall efficiency (Windham, 1983a). Given the fiscal and other constraints
discussed earlier, programmed teaching appears to be the most cost-effective form of intervention available to sub-Saharan Africa at the present time.

A potential major constraint on the use of programmed teaching as part of the larger five-part strategy for enhancing efficiency in the African educational systems is the need to adapt materials to fit the curriculum regulations and sequences of each individual nation. To be successful, a programmed teaching innovation will require careful advance deliberation with the curriculum authorities to assuage their concerns about imposition of an external curriculum. However, most host country curriculum authorities will admit that the "national curriculum" exists only as an ideal and that, at present, teachers, especially at the primary level, often are not implementing the national programs. Either the teachers are not aware of the national system because of dissemination delays or failures or the supervisory system is not effective in monitoring teachers to assure that they follow national guidelines.

An initial programmed teaching design (emphasizing such topics as mathematics, science, and health) could be introduced into the primary schools in a phased (one grade level per year) sequence. Through consultation and close collaboration with national curriculum authorities in the initial design and implementation of the materials, it
should be possible to gain acceptance of this approach. Over time the local personnel can evaluate and modify the materials and begin the process of expanding subject coverage to such areas as language, history, government, and even religion.

The need for educational improvement is dramatic and immediate, however. One must remember that almost any materials that provide teacher guidance will represent a major step forward in the majority of classrooms. Local curriculum authorities will have to override attitudes of protectionism and bureaucratic self-interest among certain personnel and join in promoting the use of programmed teaching as the first practical step toward a full implementation of the national curriculum.

The combination of the instructional materials support package and a programmed teaching instructional design system would have the greatest effect on internal efficiency in the schools. If either approach is to be emphasized, the programmed teaching alternative should take priority. In addition, it should be remembered that these two internal efficiency activities are proposed within a larger, five-part strategy for promoting overall system efficiency. While the internal efficiency activities could have some positive benefits if implemented in isolation of the three macroeducational initiatives (management capacity, incentives, and
decentralization/infrastructure activities), the significant conceptual and practical linkages among the five parts of the strategy suggest that there are exponential improvements to be gained from an integrated implementation of the proposed activities.

From Strategy to Policy in Efficiency Enhancement

The strategy that has been proposed here represents more of a change in emphasis than a change in the direction of educational development. To that extent it cannot be considered extreme or radical. The major break with the past is not in the activities that are proposed but with the commitment, by African and donor nations alike, to a specific strategy for a significant period of time. Also, while the strategy presented here lacks specifics, it does represent a more focussed agenda than is normally found among the bromides and generalizations of national or international policy statements on education.

The first step in moving this proposed strategy to the level of prescriptive policy would be for agreement to be reached on the subset of activities that would be subsumed under each of the five strategic emphases. Next, a commitment would need to be made by a subset of the donor community to support these activities in those nations agreeing to participate. The host nation governments
would have to be included as full partners in the design, implementation, and evaluation activities.

The participation in this system strategy to promote efficiency would not preclude continued or new programs or research in the traditional development areas of teacher training, facilities construction, curricular design, or learning technologies; it would, however, require that the priority commitment be to the efficiency strategy.

Each of these policy requirements is also a policy constraint on acceptance of the efficiency strategy (Havelock and Huberman, 1978). The fragmented donor and host government programs, as harmful as they may be to educational development, have persevered because they serve certain personal or bureaucratic interests. A wide range of professional educators as well as politicians and bureaucrats will object to both the concept of a focussed strategy and/or to the nature of the focus of the efficiency strategy.

It will be noted that the internal efficiency strategies (materials support and programmed teaching) will face exactly the same set of constraints that limit the present curricular alternatives. It will be noted that teacher motivation, poor supervision, inadequate distribution and communications, and inadequate finances will limit the effectiveness of the efficiency interventions.
All of this is true. However, in the short run the internal efficiency approaches proposed here are not designed to eliminate but to reduce wasted human and physical resources. The initial goal is to improve those classrooms that can be improved given the dramatic constraints on the system. The simple fact is that there are motivated teachers and students whose effectiveness can be enhanced by only the minimal form of intervention suggested here.

In the long run, of course, it is the macroeducational strategies that will reduce if not remove the existing constraints. Once this happens the internal efficiency strategy should become even more cost effective. Most rewarding will be the fact that the probability of receiving adequate instruction will be increased for those students in the most remote schools and most disadvantaged communities. While inequities will remain, the meaning of educational opportunity will be advanced from a political slogan to a meaningful policy goal in much of sub-Saharan Africa.

A final set of objections will be posed in terms of the need for more experimentation and testing of the ideas proposed here. It will be recognized that the basis for these proposals is as much founded on intuitive logic and inference as it is on statistical evidence. The rejoinder to this is difficult for anyone who values experimentation
and conservative policy development. However, it does not appear that there is any danger of damaging the present system given its endemic level of inefficiency. Also, given that the proposed strategy allows for great flexibility in design, implementation, and evaluation (and does not require abandonment of other on-going quality enhancement programs), it would appear preferable to incorporate any experimentation activities within the proposed dissemination framework.

Still, it is unlikely that these proposals will be accepted quickly or fully by the donor community or by national educational authorities in sub-Saharan Africa. This is to be expected and reflects appropriate concern by all participants in educational development for the proper design of new interventions. Also, not all objections to such a multi-faceted strategy to promote school efficiency are specious or self-interested. Given this, the major contribution of these proposals may be to generate greater and more specific debate over the status descriptions and prescriptive analyses that have been presented here.

While this debate continues, however, the participants should keep in mind that with each year that passes another cohort of African children are subjected to an inaccessible or inadequate system of schooling. The failure to resolve these schooling problems will impose new social and economic constraints on sub-Saharan African
development that will survive at least into the middle of the next century. The responsibility of both donor agencies and national governments is to develop a strategy for dealing with the immediate and long-term crisis created by the inefficient operation of the African continent's largest social enterprise—the school.
SELECTED BIBLIOGRAPHY


