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ABSTRACT

A review of 21 educational change programs supported by 42 World Bank-assisted projects found that the most successful programs have a different profile than the less successful programs. The former aimed at comprehensive change, encompassing a wide range of objectives including administrative and management training and the provision of educational materials as well as the usual curriculum and teacher training components. Most importantly, they adopted an implementation strategy that was congruent with political and economic factors and with the program's objectives. Three factors were found especially critical for successfully implementing educational reform programs: (1) administrative development to strengthen institutions and organizational structure, including the development of innovative management; (2) significant components for in-service teacher training; and (3) strategies to gain the commitment of implementors, external agencies, and government authorities. The number of children enrolled in schools throughout the developing world has grown substantially. This growth has stretched available managerial, professional, and financial resources beyond the limits of effectiveness. Providing pupils with quality education may overtake providing access to schools as the main goal in educational development in the coming years. The document includes tables, summaries of the 21 programs studied, and a 56-item bibliography. (Author/JB)

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World Bank Discussion Papers

Pathways to Change

Improving the Quality of Education in Developing Countries

Adriaan Verspoor

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World Bank Discussion Papers

Pathways to Change

Improving the Quality of
Education in Developing
Countries

Adriaan Verspoor

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Abstract

The World Bank has supported a broad spectrum of educational reform programs. The outcomes of many of these programs have been mixed. A review of Bank experience found that the most successful programs have a different profile than the less successful programs. The former aimed at comprehensive change, encompassing a wide range of objectives that include administrative and management training and the provision of educational materials as well as the usual curriculum and teacher training components. Most importantly, they adopted an implementation strategy that was congruent with political and economic factors and with the program's objectives.

Three interventions were found especially critical for successfully putting programs into practice in classrooms and schools. First, successful programs paid significant attention to strengthening institutions and organizational structure, including developing a capacity for innovation management. Second, successful programs included significant in-service teacher training components. Third, successful programs included strategies to garner the commitment of implementors, external agencies, and government authorities.

The analysis suggests five basic considerations that should be taken into account in the design of educational change programs and related investments:

- implementation is the phase of the change process that most critically affects project success and should be given top priority;
- effective administrative infrastructures are a precondition for the implementation of any significant change program;
- project designs need to make provisions for incremental and flexible implementation strategies;
- arrangements for systematic learning from experience are essential to the program design; and
- attention needs to be paid to the eventual institutionalization of the change program at an early state of implementation.

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Janet Leno provided valuable assistance in the initial phases; she wrote the case summaries and made important contributions to the analysis, especially in Chapter IX. Deborah Bloch helped to incorporate suggestions for improvement and comments on early drafts.

PREFACE

Issues of educational quality are moving increasingly into the forefront of the educational agenda of policy makers in developing countries. Yet, attempts to improve the quality of education have not yielded the expected results, often because programs have been poorly implemented.

Recognizing the critical importance of effective implementation of quality improvement programs, the Education and Training Department of the World Bank launched in 1985 a project to review and analyze the Bank's experience in this field. The findings were expected to enhance understanding of the process of educational change and the issues involved in successful program implementation. A first paper, Implementing Educational Change: The World Bank Experience (Report No. EDT 44), reviewed the nature and scope of the Bank's assistance for educational quality improvement during the period 1963-1984, including an analysis of aggregate portfolio indicators and a summary of project outcomes.

The second step is a book by Dennis A. Rondinelli, John Middleton, and Adriaan M. Verspoor, Management Strategies for Education Reform: Guidelines for Project Analysis and Planning in Developing Countries, 1988 (Duke University Press, forthcoming), that describes a method for analyzing and designing management strategies for projects and programs to promote innovation and change in education organizations.

This volume is the third building block in this process of analysis and review. Based on a detailed analysis of 21 educational change programs supported by 42 Bank-assisted projects, it examines the process of change in these cases and analyzes the "pathways to change" that the most successful projects followed. It draws heavily from the literature on the implementation of educational change and innovation in the developed world, while highlighting the specific problems that developing countries face in implementing educational quality improvement programs in a resource-constrained environment.

This volume contains important lessons for educational planners and decisionmakers in the developing world as well as for the education sector staff in international aid agencies. Follow-up field studies are being planned to further enhance and refine our understanding of the process of educational change in the developing world.

Wadi D. Haddad,
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Education and Employment Division,
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"For more than a hundred years much complaint has been made of the unmethodical way in which schools are conducted, but it is only within the last thirty that any serious attempt has been made to find a remedy for this state of things. And with what result? Schools remain exactly as they were."

The Great Didactic of John Amos Comenius, 1632

I. BACKGROUND

Introduction

Considerable investments in education during the last three decades by both governments and international donor agencies have led to an impressive increase in the number of children enrolled in schools throughout the developing world. Many developing countries now offer a place in primary school to all children who reach school age. However, in many instances, this rapid enrollment growth has stretched available managerial, professional, and financial resources beyond the limits of minimal effectiveness. In addition, the unfavorable economic environment of the 1980s and the resulting scarcity of resources jeopardizes further the ability of developing countries to provide quality education. Many schools now face critical shortages of instructional materials and a crumbling administrative infrastructure. Accumulating research evidence shows that the quality of teaching and learning continues to be very low, particularly in rural areas and throughout Sub-Saharan Africa (Heyneman, 1979 and 1983; The World Bank, 1980). Repetition and drop-out rates are often high and functional literacy remains an elusive goal for many primary school graduates.

Access to schooling has thus resulted in a meaningful education for only a relatively small minority of the children in the developing world. In many countries, both parents and political leaders are voicing concerns about the quality of education -- the internal and external efficiency of the sector -- with increasing intensity. Furthermore, the

inability of the education systems in these countries to educate students to an acceptable level of learning achievement raises questions about education's contribution to national economic development and its claim on national resources.

There is a growing danger that the progress in educational development realized during the past three decades will be eroded by this decline in the quality of education. Consequently, providing pupils with the opportunity to achieve in school may overtake the provision of opportunities to enter school as the priority item on the educational development agenda. Nevertheless, the continued rapid growth of the population will in many countries continue to generate an increasing demand for system expansion. The challenge for most countries today is, therefore, how to simultaneously increase access and improve the quality of education under conditions of severe financial austerity.

The desire for educational quality improvement and reform is not new. Almost every developing country has at some time in the past 25 years embarked on an educational reform or change program, frequently in partnership with the World Bank. Yet, there is a sense of urgency today that was absent in the past. Given the present economic environment, the need for policy reforms designed to do better with increasingly scarce resources has become inescapable in many developing countries, particularly the least developed ones.

Little systematic information is available on the record of achievement of earlier reform programs. Completion reports of World Bank projects have frequently been issued too early to provide an accurate assessment of outcomes, and impact evaluations have been few. The impression, however, is that the record is mixed at best. Recent reviews of the experience of several Bank-supported projects tend to confirm this. In a review of experience with lending for primary education, Romain (1985) concluded:

Little is known of how effectively the new curricula are being applied... Implementing large-scale national reforms of primary education, especially in regard to practical subjects, has proven to be quite risky.... The search should therefore be intensified for reforms which are replicable. (p. iii)

Similarly, Searle (1985) reviewed World Bank experience with textbook projects. She found:

...evidence for short-falls in every aspect of textbook provision [in completed projects]. (p. 1), and, ...both substantial improvements and continuing shortfalls in project design. (p. 25)

And Haddad's (1986) survey of experience with teacher training led him to conclude, with respect to quality improvement objectives:

Most of the teacher training components with qualitative objectives were not assessed. The few that were fell more on the unsatisfactory side either because human and physical resources were not adequate or because the attitude of trainees was negative. (p. v)

There are two main reasons for the disappointing record of quality improvement programs. First, our knowledge of the effectiveness in LDCs of specific educational methods and technologies remains limited.

Second, many projects have failed at the implementation stage before the effectiveness of the program could be tested. Improving implementation is therefore an essential first step towards educational quality improvement. Quality improvement is usually the result of a complex, multi-faceted process referred to as educational change. In this paper, educational change is defined as the planned improvement in the educational system aimed at teaching practice, learning resources, or structure and organization with a view to enhancing student achievement.

The lack of knowledge of the process of educational change has been recognized in developed countries since the early 1960s (Miles, 1964). Since then, research on the experience of school systems in Europe and North-America has enhanced our understanding of the way change processes in education work and can be implemented more effectively. The OECD Center for Educational Research and Innovation undertook in the early 1970s a study of the process of change in education based on seventeen case studies from OECD countries (OECD/CERI, 1973). The U.S. government has funded major studies on the process of change which analyze the implementation of federally sponsored change programs (Berman and McLaughlin, 1978) and, more recently, the experience with the process of innovation at the school and district level (Crandall, et al., 1983). In addition, many case studies have further analyzed the characteristics of educational change processes at the national, regional and school level. Unfortunately, very little systematic research in this field has been done in developing countries. The findings of the developed country literature have, therefore, not been adapted to the specific conditions of developing countries and have not

been incorporated in the tool kit of education planners and project designers in developing countries and aid agencies (Havelock and Huberman, 1978).

This gap in understanding the educational change process in developing countries is a major constraint on the ability of these countries to design and implement effective quality improvement programs, which may jeopardize internal and external support for these programs. The World Bank has been supporting quality improvement and educational change in developing countries for more than twenty years. Its project experience is rich and varied, containing many lessons to lead the way towards improved practice of change in education. This study draws on that experience to identify those program design and implementation strategy characteristics that are associated with implementation success.

Overview

The following chapter describes the analytical procedures and methods. Chapter III reviews the scope and nature of Bank support for educational change. At an estimated cost of \$6.4 billion, change programs represented about 60% of the cost of Bank-supported education projects approved between 1963 and 1984. Overall the approach to change emphasized program adoption rather than implementation, curriculum change rather than institutional strengthening, and dissemination rather than application. Of the 296 change programs, a sample of 21 cases that were reported to have moderately or highly successful achievements was selected for further analysis -- which is the subject of this book.

Chapter IV highlights the complexity and length of the educational change process and distinguishes three phases: initiation, implementation, and institutionalization. The initiation phase, described in Chapter V, includes the adoption of the change, the preparation and planning of strategies, and often experimentation. The cases showed that programs start at different points and can achieve high outcomes provided their objectives and design are congruent with the country's capacity to implement change.

Chapter VI sets forth the analytic framework for examining the implementation phase. Two contingency variables are identified -- the degree of innovation and environmental uncertainty -- and combined into four implementation strategies or "pathways to change":

- o progressive innovation (low uncertainty/low innovation) - a strategy aimed at implementing a number of successive changes, each rather modest in itself whose cumulative effect over time results in considerable change;
- o incremental expansion (low uncertainty/high innovation) - a strategy geared toward the implementation of ambitious innovations in a gradually increasing number of schools;
- o discrete change (high uncertainty/low innovation) - the traditional project approach in which a modest program is implemented in a limited number of schools and does not include broader policy or coverage objectives; and
- o permanent pilot (high uncertainty/high innovation) - the result of an ambitious, comprehensive change program that showed promise in its pilot phase but has not managed to mobilize the support and resources necessary for broader application.

Chapter VII examines the implementation strategies of the sample cases. Four findings stand out. First, ambitious change programs aimed at comprehensive and large-scale change adopted incremental strategies. Second, ambitious programs were all implemented under conditions of reasonable environmental stability. Third, program transformation nearly always occurred. Fourth, implementation strategies changed over time as environmental conditions changed or as the innovation was redesigned.

The three chapters following the discussion of implementation strategies focus on specific intervention points critical for success. Chapter VIII centers on the place of administrative development in the educational change process. High outcome programs were found to have four features in common: (i) strengthening of the administrative capacity at the school and district level; (ii) development of effective policy, planning and supporting institutions at the central level; (iii) special attention to innovation management; and, (iv) establishment of effective mechanisms for feedback.

Teacher training was the second critical intervention point (Chapter IX). High outcome programs allocated at least three or four times as much of their total resources to in-service training programs as the typical Bank project. Successful training programs were permanent and easily accessible to teachers, provided effective supervision and support at the school level, were adjusted to the teachers' level of knowledge and experience, and attempted to motivate teachers by providing opportunities for professional development.

The third intervention point was the attention paid to building and maintaining commitment (Chapter X). Successful programs built a broad base of support at the grassroots, or local, level. They often required consistent external support, particularly during early implementation stages, to help compensate for low internal commitment. And, demonstrated success was the surest way to build and maintain high-level government commitment.

Chapter XI assesses the extent to which the sample programs actually affected classroom practice using three criteria: input delivery, coverage, and application. The most noteworthy finding is the high levels of use achieved by ambitious programs in the poorest countries.

The ultimate goal of the change program is the sustained application and integration of the innovation into regular classroom and administrative practices. When that is achieved, the change program disappears as an innovation and becomes institutionalized. Chapter XII discusses the characteristics and process of institutionalization, highlighting the importance of early and constant attention to institutionalization in the initiation and implementation phases. Implementation success was the prerequisite of institutionalization.

To assess the overall outcomes of the sample programs in terms of student achievement, Chapter XIII ranks the cases on the basis of levels of use, institutionalization, and ambitiousness, using available

circumstantial and impressionistic data. Successful programs were found to have high levels of use and had put in place policies and institutions to sustain progress. Furthermore, low outcomes generally resulted from poor implementation of a good idea. However, the evidence is sketchy and underscores the need to systematically monitor student achievement.

Many of the change programs supported by the Bank have been large-scale programs linked with national objectives of social and economic development and comprising bundles of innovations. Chapter XIV outlines the challenges presented by large-scale change, stemming from the conflicting demands of central level priorities and local priorities. The best approach to resolving these dilemmas is a "think big and start small" strategy, which combines a willingness to learn from experience, an insistence on school accountability, and an acceptance of flexible procedures and diverse standards.

Chapter XV discusses the implications for the Bank. There is no need for a radical change in procedures; the successful cases illustrate that high outcomes can be achieved with the tools at hand. What is needed is a change in the way of thinking about change, a shift from adoption to implementation, from blueprints to incremental learning processes, and more broadly, from inputs to outputs. The emphasis needs to be on institutional analysis, effective mechanisms for monitoring and evaluation, and implementation support and supervision.

II. METHODOLOGY

First Round Analysis

To identify the characteristics correlated with effective implementation, two rounds of analysis were undertaken. The first round entailed a review of the scope, objectives, key design characteristics, and outcomes of the Bank's support for educational change components. It examined all 282 education projects approved for Bank financial support between 1963 and 1984, and identified in these projects 296 change components using the definition of educational change cited above. Bank projects are nearly always multifaceted, comprising in one financing package several components or elements with different educational objectives or addressing different parts of the educational system. For example, the Third Education Project in Paraguay included a component supporting primary education improvement in addition to components assisting the expansion of lower secondary education and the diversification of upper secondary education. Project components representing less than 10 percent of the total project cost were excluded from the review.

In line with the definition of educational change, the review focused specifically on:

- (1) Improvements in teaching and learning conditions;

- (ii) Changes in curricular content, teaching method, or availability of teaching/learning resources such as textbooks, equipment, or teacher skills;
- (iii) Structural and organizational changes at the school, district, and national levels to the extent that they directly affect classroom processes, as well as the development of supporting institutions, such as testing services and pedagogical institutes; and,
- (iv) Systemwide changes, not merely improvements in the operation of a single (or a few) institution(s).

The change components were examined on three dimensions. First, they were classified by program objectives: curriculum change (content and methods), improvement in teacher classroom behavior (e.g., less lecturing, more active learning methods), organizational improvement (including managerial and administrative strengthening, examination reform, and institutional development), and technological change (e.g., materials and books provision, use of radio or television).

Second, the change components were classified according to size - - i.e., the amount of deviation from existing practice -- of the attempted quality improvement: comprehensive change (encompassing a cluster of different program objectives); subject-related change (focusing on curriculum objectives); and, enrichment (providing more or better resources while retaining essentially the same curriculum objectives).

Third, three broad implementation approaches were distinguished: experimentation (trying out an innovative program on a small scale to test its effects in a classroom situation); partial application (limiting implementation to a geographic region or to schools with certain

characteristics); and, full application (introducing the change throughout the system).

The assessment of outcomes was based on ratings contained in project completion reports (PCRs), project performance audit reports (PPARs), and supervision reports using the following scale from 1-4:

- 1 = marginal success or failure
- 2 = mixed results
- 3 = good, most objectives achieved
- 4 = outstanding results

PCRs are, in most cases, prepared by Bank staff on the basis of a review of the project files and a field visit which includes interviews with local staff familiar with the project. PPARs are prepared by the Operations Evaluation Department (OED), an independent evaluation department in the Bank, on the basis of a detailed review of the project files and, for selected projects, a brief field visit. Supervision reports are prepared by Bank operational staff to report on the status of implementation following a mission to the field. These reports often combine the assessment of educational achievements with a judgment on the degree of realization of the infrastructure objectives into a summary assessment of the project's outcomes. Judgments on outcomes are usually based on observations during short random field visits and interviews with local staff familiar with the project. Formal evaluation studies are normally not available at the time of the completion mission. Thus, at

this first stage, the rankings of the change programs remain very preliminary. The findings of this initial review of Bank assistance for educational change have been reported in an overview paper (Verspoor, 1986) and are summarized in Chapter III.

Second Round Analysis

The first stage was followed by a detailed analysis of 21 cases. For this second phase, the unit of analysis studied was the change program, i.e., a coherent set of actions directed towards a broad goal of educational change. A change program often includes several "bundles of innovations" (van den Berg and Vandenberghe, 1984) linked together by program objectives. For example, a primary school improvement program will often include a "bundle" of textbook, teacher training, and infrastructure components. Many change programs comprised components supported exclusively by the government or development agencies other than the Bank, thus extending in many instances beyond the confines of Bank-assisted operations. Others were supported by several investments approved in sequence over a number of years. The findings of this second round analysis, which draws upon the implementation experience of education change programs in 21 countries and supported by 42 Bank projects, constitute the main body of this paper.

To obtain the cases for this in-depth review, a sample of 24 change programs was drawn from the database of 296 change components. These cases were selected to constitute a sample of at least moderately successful education change projects (i.e., initial outcome ranking between

2 and 4), and representative in terms of regional distribution, outcomes, and size of change. Five cases from the initial sample had to be dropped due to insufficient data. Two cases, Senegal and Tunisia, were added to provide parallels to the Mali and Morocco cases which had been included in the original sample. The number of change programs included in the review thus totaled 21. For each of the programs, a detailed case description was prepared based on the information available in Bank files and complemented by interviews with Bank staff familiar with the projects. Case studies were published in an informal paper issued by the World Bank Education and Training Department (Verspoor, 1986). Table 2.1 presents a list of the sample cases ranked by outcome level; each case study is summarized in the appendix.

To analyze these cases, they were first grouped and compared by type of program (e.g., primary, secondary, higher, or non-formal). After these group-specific comparisons were made, the next step was to identify common elements across groups. The analysis sought specifically to identify successful strategies for the implementation of major change projects, examine factors that were systematically associated with successful implementation, and draw lessons for the design of effective implementation strategies for future investments in educational change.

It is important to note that project components which were judged unsuccessful by authors of the completion or supervision reports were eliminated from the pool from which the sample was drawn. This obviously introduced a bias in the sample towards higher outcome cases. The principal reason for this approach was the belief that an understanding of

the dynamics of effective change strategies can best flow from the study of effectively implemented change programs. Lessons from low outcome cases might help to avoid some pitfalls, but they generally do not provide guidance on how to do things right. In addition, selection from moderate as well as from high outcome cases provided ample variation in outcomes. In fact, several of the cases rated initially as 2 or 3 had mainly infrastructure accomplishments and negligible educational outcomes.

The major limitation of this study is its reliance on secondary source data. No field visits were undertaken in connection with this study to verify the case studies with the actors or to observe the application of the innovation in classrooms. The nature of the review is therefore purely exploratory. To enhance the understanding of the process of change in the developing world and validate the findings of this review, follow-up field research is urgently needed.

Table 2.1: Characteristics of Change Programs in the Sample

COUNTRY	YEAR BEGUN	PROGRAM CONTENT	NO. PROJECTS	IMPLEMENTATION	INSTITUTIONALIZATION	OUTCOME	STATUS
Ethiopia	1972	Comprehensive reform elementary education	3	outstanding	outstanding	outstanding	ongoing
Bangladesh	1978	Comprehensive reform elementary education	2	outstanding	outstanding	outstanding	expanding
Lesotho	1980	Textbook publishing and distribution	1	outstanding	outstanding	very good	established practice
Tunisia	1970	Add manual work to elementary curriculum	1	very good	outstanding	very good	ongoing
China	1980	University science and engineering education	2	outstanding	very good	very good	ongoing
Thailand	1987	Diversified secondary education	4	outstanding	very good	very good	expanding

Table 2.1: Characteristics of Change Programs in the Sample (cont'd)

COUNTRY	YEAR BEGUN	PROGRAM CONTENT	NO. PROJECTS	IMPLEMENTATION	INSTITUTIONALIZATION	OUTCOME	STATUS
Yemen Arab Rep.	1971	Nonformal rural training	4	very good	very good	very good	expanding
Egypt	1977	Technician training for industrial sector	1	outstanding	very good	very good	operating effectively
Malawi	1985	Distance education for lower secondary students	2	very good	outstanding	good	ongoing
Senegal	1973	Science and technology teaching in grade 9/10	1	very good	very good	good	applied in project schools
Haiti	1972	Comprehensive reforms elementary education	4	very good	moderate	good	gaining support
Morocco	1978	Add manual work to elementary curriculum	2	good	good	good	piloting before generalization
Indonesia	1975	Reforms of elementary and secondary teacher training	2	moderate	moderate	moderate	uncertain
Pakistan	1977	Comprehensive reforms of elementary education	2	moderate	moderate	moderate	further experiments ongoing
Guatemala	1967	Diversification of secondary education	2	moderate	moderate	moderate	uncertain, may be dwindling
Paraguay	1975	Comprehensive reforms of elementary education	2	moderate	low	moderate	dwindling
Nicaragua	1973	Reorganization of education administration	1	low	moderate	moderate	uncertain
Liberia	1970	Ruralization of elementary education	1	low	low	low	discontinued
Malaysia	1973	Instructional support radio and television	1	low	low	low	applied in few schools
Mali	1973	Science and technology teaching in grade 9/10	1	low	low	low	program not in use
Benin	1967	Nonformal rural training	1	low	low	low	dwindling

III. BANK SUPPORT FOR EDUCATIONAL CHANGE

Overview Findings

Support for educational change has been a prominent feature of Bank lending for education. Between 1962 and 1984, the Bank provided financial support for 282 education projects, 225 of which included a total of 296 change components. At a cost of more than \$6.4 billion, this represents 59% of the total cost of Bank education projects approved during that period (Table 3.1). Through these projects, the Bank has supported a broad spectrum of educational change programs, addressing problems of

Table 3.1: Number and Cost of Educational Change Components in Bank-Assisted Projects, 1963-1984

Region	Total No. of Projects	No. With Change Component	%	Total Project Cost \$ billion	Total Change Comp. Cost \$ billion	%	Total No. of Change Components
West Africa	42	33	79%	.7	.3	49%	47
East Africa	58	50	86%	1.1	.4	36%	71
EMENA	58	40	69%	2.3	.8	35%	51
LAC	54	47	87%	1.4	1.1	78%	59
East Asia	52	42	81%	4.9	3.5	71%	54
South Asia	18	13	72%	.4	.2	61%	14
Total	282	225	80%	10.8	6.4	59%	296

EMENA: Europe, Middle East and North Africa Region

LAC: Latin America and Caribbean Region

quality at all levels of the system. On balance, the aims of the change programs have followed the evolution of the Bank's overall lending strategy. For example, the increasing emphasis on basic education that has been articulated in Bank policy statements since the early 1970s is reflected in lending patterns for educational change. Between 1974 and 1984, nearly 40% of the change components in Bank-assisted education projects aimed at primary education and about 15% at adult literacy. This compares with 15% and 7% respectively for the preceding decade.

The general overview of Bank support for educational change (Verspoor, 1986) found most change components only partially successful and the average outcomes of these projects moderate: 2.5, on a scale of 1 (no or limited achievements) to 4 (outstanding achievements). Initially, about 10% of the change programs were rated 1. Further analysis, focusing especially on educational objectives, suggests that this percentage is in fact closer to 20%.

The overview raised four major issues concerning the Bank's approach to educational change that need further exploration. The first issue relates to the predominance of curriculum change as an instrument for quality improvement. Nearly 90% of the educational change components in Bank projects included support for curriculum change, a considerably higher proportion than for teacher training (66%), organizational change (40%) or technological change (32%). Yet, questions about the effectiveness of curriculum change are widespread. In light of research evidence demonstrating the importance of a wide range of variables on educational

achievement (Fuller, 1985) and on effective schools (Purkey and Smith, 1983; Fullan, 1985; Cohn and Rosmiller, 1987), the review proposes that a prima facie case can be made for a more balanced approach to quality improvement in developing countries, especially in the early phases of their educational development (Verspoor, 1985).

The second issue concerns the relative neglect of administrative development and organizational change in the design of educational change strategies. The data suggest that assistance for strengthening school support and supervision systems, improving the quality of school management, establishing a permanent capacity to carry out critical professional functions such as curriculum and materials development, and measuring student achievement and testing have not featured as prominently in the lending for educational change as the literature suggests they should (Kyle, 1985).

The third issue identified pertains to the inattention to implementation at the classroom level. Only 12% of the change components provided for professional support and assistance at the school level. The apparent underlying assumption that innovations can be transferred effectively from the center to the periphery provided the teachers are properly instructed, reflects what Ernest House (1981) calls the "technocratic perspective" on educational change. Studies in developed countries (Berman and McLaughlin, 1978; Crandall et al., 1984) point out, however, that an implementation approach focusing on capacity building at the school level and consistent application in the classroom may be more

effective and better promote the institutionalization and sustainability of the change than a technocratic top-down approach.

Fourth, the overview called attention to the disappointing performance of many African projects. In the 25 years since independence, Africa has been the scene of many ambitious attempts at educational change. Many of these reforms emphasized curriculum change and neglected institutional development and organizational strengthening. The review suggests that these relative priorities contributed to Africa's disappointing performance in bringing about successful educational change.

Profile of Successful Programs

The second-round analysis focused on the more successful change components. The bias towards higher outcome programs built in the sampling procedure resulted in the selection of a set of programs that had a 20% higher outcome rating than the average rating of the 296 change components included in the original data set. For programs in the sample with high and moderate outcomes (2/3 of the sample), the outcome rating was 40% higher. A comparison of programs in the full data base, the sample, and the sample subset of high and moderate outcomes reveals that the features of higher outcome cases differ significantly from those of the typical change component in the data base.

Table 3.2: Target Level of Educational Change Programs 1/

	Primary	% of All Programs	Secondary	% of All Programs	Higher	% of All Programs	Non-formal 2/	% of All Programs	All Programs
Data base	100	34%	174	58%	41	13%	96	32%	296
Sample	13	62%	11	53%	2	10%	13	62%	21
High/Moderate	9	64%	7	50%	2	10%	5	35%	14

1/ A program may affect more than one level.

2/ This level includes literacy, agricultural, and technical training.

Educational level: Table 3.2 shows the distribution of educational change components by the target educational level for the full data base, the sample, and the sample subset of high and moderate outcome programs. More than 60% of the programs in the sample targeted primary education, compared with only 34% of the programs in the general data base. At the same time, nearly 60% of the programs in the general data base supported secondary education, compared to 50% in the sample. Since the sample was biased intentionally toward successful programs, these findings suggest that Bank-supported programs have been more successful at the primary level than the secondary level. Further examination of the data base supports this hypothesis. Of the 296 change components, more than half of the primary education projects had an outcome rating of 3 or 4, whereas only 31% of secondary education projects obtained those scores. Berman and McLaughlin (1978), Rutter (1979) and Porter (1980) obtained similar findings for the United States, Europe, and Australia.

Program objectives: As illustrated in Table 3.3, the sample programs emphasized different program objectives than programs in the general data base. Most notably, curriculum change accounts for only 25% of the total number of objectives in the sample, as opposed to 37% of all Bank-supported change objectives. On the other hand, organizational change objectives account for almost 30% of the change objectives for high/moderate outcome programs as compared with 19% for the larger data base.

Table 3.3: Objectives of Educational Change Programs

	Total No. of Change Objectives	Curriculum Change		Teacher Change		Organizational Change		Technological Change	
		No.	%	No.	%	No.	%	No.	%
Data base	698	257	37%	193	28%	134	19%	114	16%
Sample	76	19	25%	19	25%	20	26%	18	24%
High/Moderate	49	12	24%	13	27%	14	29%	10	20%

Not only did the sample programs emphasize different objectives, but they combined a wider range of objectives, as illustrated in Table 3.4. The dominant change strategy, used in 66% of the sample cases, is the cluster combining all four categories of change objectives. In the data base, this cluster was found in only 18% of the change programs. Also noteworthy is that in the general data base, curriculum development occurs in 41 out of the 296 change programs (14%) as a single change objective, whereas in the sample, such a narrow approach does not occur at all.

Table 3.4: Most Frequently Occurring Combinations of Change Objectives

Objective(s)	Number of Occurrences Data base		Number of Occurrences Sample	
	No.	%	No.	%
Curriculum, teachers	66	22%	0	0%
Curriculum, teachers, org., tech.	52	18%	14	66%
Curriculum	41	14%	0	0%
Curriculum, teachers, organization	34	11%	2	10%
Curriculum, organization	23	8%	1	5%
Curriculum, teachers, technology	20	7%	1	5%
Curriculum, technology	12	4%	0	0%
Teachers, technology	9	3%	0	0%
Teachers, organization, technology	9	3%	2	10%
Other	30	10%	1	5%

In addition to focusing on different objectives and encompassing a wider range of objectives, the sample cases adopted a broad mix of interventions to achieve organisational and technological change objectives. Efforts to bring about organisational change include the development of examination systems and central institutions, such as curriculum development centers. Technological change was supported by books and by educational broadcasting (radio/tv) and school construction departments. As indicated in Table 3.5, a broader range of interventions was included in the case studies than in the data base.

Table 3.5: Frequency of Interventions Occurring in Educational Change Programs

	Organizational Change							Technological Change				
	No. Change Comp.	Admin. Mgt. No.	%	Central Institutions No.	%	Examina-tions No.	%	No. Change Comp.	Radio & TV No.	%	Materials Books No.	%
Data base	130	118	88%	50	38%	23	17%	114	42	37%	95	36%
Sample	24	13	85%	12	80%	15	75%	18	6	33%	17	95%
High/moderate	14	9	84%	10	71%	12	86%	10	4	40%	10	100%

Experimentation: Over half of the sample cases (52%) provided for some form of experimentation compared to 39% of cases in the general data base. Among the subset of high and moderate outcome programs, the percentage of those including experimentation is even higher -- 66%. In general, provision for a trial period was made most frequently for programs with ambitious objectives in terms of scale and size of change. Eighty-five percent of the high and moderate outcome sample programs with ambitious change objectives went through a trial phase, as compared with 46% of the ambitious programs in the general data base. This suggests that experimentation and learning from experience are key factors in the successful implementation of ambitious change programs. (See Chapters V and XIV for further discussion of this point.)

Summary

The picture that emerges from this analysis shows that the typical approach to educational change is relatively technocratic, emphasizes curriculum development and dissemination, but neglects the administrative and school environment in which the new programs are to be applied. The more successful educational change programs have a notably different profile. They aim at comprehensive change, but adopted a phased implementation strategy with considerable experimentation and testing in the early phases. Curriculum change is a much less dominant program objective and change strategies are broader, reflecting the complexity of the educational change process. The usual curriculum and teacher training interventions continue to be included but they are usually combined with support for administrative and management training or the provision of educational materials. The end result is a multi-faceted design composed of several objectives which are in turn supported by a mix of interventions.

IV. THE PROCESS OF CHANGE

The Time Perspective

Perhaps one of the most frustrating features of educational change is that it requires time. Implementing change in large organizations typically involves changing the performance of the smallest organizational unit, which, in the case of education, is the school. In "loosely coupled" organizations (Weick, 1976) like education systems, this is a time consuming process that needs to be repeated many times with considerable variation to account for specific local conditions. But time is what political and educational leaders, anxious for rapid results, often do not have. It is, therefore, not surprising that research on educational change initially focused on analyzing the time required for innovations to spread.

The time frame has been found to vary significantly according to the objectives of the program. Programs designed to change the educational objectives, organizational structure, or professional roles of teachers and administrators typically take longer to implement than programs that have more limited objectives. Since the 1950s, several European countries have launched major nationwide reforms of their educational systems (Heidenheimer, 1978). These reform efforts generally have been massive, centrally-initiated, and planned in detail; nearly all have taken more than a decade to reach full implementation.

But even small-scale change requires time. Implementation of school-specific improvement programs in OECD countries is reported to take between 3 and 5 years (Van Velsen, 1985). Crandall and associates (1983) studied the implementation of relatively small-scale and well-focused "proven" innovations and found that, even under those relatively favorable conditions, initiation and implementation took as long as three years.

The experience of the programs in this review attest to both the lengthy process of change and the different time perspectives needed for limited and comprehensive reform. But the process, regardless of the degree of innovation, takes even longer in the developing world. Comprehensive change, often taking decades, can rarely be completed in the typical 5-7 year implementation period of Bank projects. For example:

The education reform in Ethiopia, which incorporates broad educational and organisational objectives, had its roots in sector analyses done in 1972, started officially in 1974 and has been going on ever since.

The diversification program of secondary schools in Thailand began as a small-scale experiment in the late 1960s. It gained momentum during the education reform movement in 1973 and has been gradually expanding ever since, with the support of four Bank projects. Only since 1978 has the program begun to move into rural areas, and so far it has affected about 50 percent of the secondary schools.

In Haiti, preliminary work on education reform started in 1974, with application officially beginning in 1981. Full implementation is tentatively planned for 1992. In 1985, about 50 percent of the first graders were enrolled in reform classes.

Projects with more limited objectives, generally aiming to improve school effectiveness within the bounds of existing organizational

arrangements, were implemented more rapidly. The Lesotho textbook project was successfully completed within the five-year implementation period, and the technician training program in Egypt was completed in six years.

Although implementing educational change, particularly comprehensive reforms, requires a considerable amount of time, the process appears to shorten with experience. In 1941, Mort estimated that it took about 50 years for an innovation to achieve nationwide application in the United States. About 20 years later, Miles (1964) found that the rate of innovation implementation had accelerated, and forecasted that it would continue to do so. A study of federal programs supporting educational change in the 1960s (Berman and McLaughlin, 1978) found that approximately seven years were needed before the effects of the programs became visible and could be tested.

The time factor however, while important in terms of designing programs and keeping expectations realistic, is not necessarily the appropriate yardstick by which to measure change. The real measure of implementation success may be, as Dalin (1978) has argued, the enhanced ability of large numbers of teachers to effectively implement progressively more ambitious innovations. Among the sample cases, Ethiopia and Bangladesh seem to be well along the way to "institutionalizing" this ability to innovate. This by-product of successful change may in the end be more important than the impact of the original change program.

Phases of Change

Most researchers distinguish three phases in the educational change process (Fullan 1982). Phase one, called initiation, mobilization or adoption, consists of the events leading up to and including the decision to adopt an innovation. Phase two, implementation, is the process of putting an innovation into practice in the classroom. Some researchers (Huberman and Miles, 1984) have found it useful to distinguish between early and late implementation experiences. The third phase is called incorporation, continuation, routinization, or institutionalisation, and refers to the extent to which the program is routinely applied and can be sustained as part of normal administrative and classroom practice. At that point, the reform is no longer regarded as an innovation.

This sequence of events in educational change programs obscures a reality that is exceedingly complex. A large number of variables affects progress through the phases; progress is frequently non-linear; the beginning and end of each phase often cannot be precisely demarcated. Nevertheless, marking change by these phases helps to bring some order to the discussion of the educational change process. It should be noted that this sequence applies only to planned change. Many changes in education are not centrally planned and develop spontaneously in classrooms and schools. This study, however, analyzes only the results of deliberate efforts of governments to improve the quality of education by changing organizational and pedagogical practices. The following chapters discuss the experience of the sample programs as they moved through the different phases.

V. INITIATION

The initiation phase includes the events leading up to the decision to adopt the innovation. The sequence and relative importance of these events and the relative influence of the various actors involved in the initiation process vary considerably among the cases in the sample. This chapter examines the origins of the change programs, the role of planning and experimentation, and the influence of initial country and sector conditions on the design of the implementation strategies.

Origins

The origins of the change programs in the sample were not always easy to trace; nevertheless, the analysis identified two main processes that led to the adoption of the change. The first was driven by a strong internal will and commitment to change, generally motivated by political factors. The second, backed by the availability of external funding, was guided by the advice of outside experts. In practice, the distinction between these two approaches often blurred. Still, it was possible to clearly identify the dominant process in about half of the sample cases.

Among the sample cases, four of the programs were primarily conceived and designed internally:

In Ethiopia, the reform was closely linked to the political objectives of the revolutionary government that came to power in 1974. This government considered education one of the key elements in building a socialist society. Bank support was

actively sought but did not materially affect the key objectives of the reform.

The objectives and content of China's University Development Program were clearly based on nationally defined priorities. While the availability of external funding facilitated implementation, the reform originated from internal forces determined to redress some of the damage inflicted upon higher education during the cultural revolution.

In Indonesia, the program to reform primary and secondary teacher training was the logical consequence of the education reform that the government had begun to implement a few years earlier.

Finally, the Malaysia educational radio and television program was closely linked with political objectives of national integration and related educational and language policies.

External influences clearly dominated program initiation and adoption in six of the sample cases, two of which were the YAR and Haiti.

In the Yemen Arab Republic (YAR), a basic education component was included in the first Bank-supported education project at the instigation of the appraisal mission. The government was uncertain about the importance of this component, did not have a clear understanding of either its objectives or its implementation strategy, and consequently, did not implement the project. However, continued Bank support for the program and effective Bank assistance in planning an implementation strategy for a follow-up investment in the second project brought the program to life, led to early implementation success, and gradually generated government commitment.

The Haiti basic education reform also was initiated largely at the behest of external agencies. The foundations of the reform were laid by a joint Inter-American Development Bank and UNESCO mission in 1974, and the specific design was further influenced by visiting staff of aid agencies and resident technical assistance experts. It is unlikely that this reform would ever have been adopted without promotion by external agencies.

As indicated in Table 5.1, there seemed to be no straightforward relationship between the adoption process and the program's outcome. However, the cases do suggest that the adoption process was influenced by

the strength of the country's political and administrative infrastructure. Externally-driven adoption processes occurred mostly in countries with weak infrastructures, and internally-driven processes characterized programs in countries with well-established policy institutions.

Table 5.1: Relationship Between Adoption Process and Outcomes of Selected Projects

Dominant Influence In Adoption	High Outcomes	Moderate Outcomes	Low Outcomes
External:	YAR	Senegal Haiti	Benin Mali Nicaragua
Internal:	Ethiopia China	Indonesia	Malaysia

Planning

Planning involves two distinct activities. First, the planning process includes selection of appropriate program objectives, the assignment of priorities among them, and the selection of broad implementation strategies; these tasks are the responsibility of top-level policy makers and together are known as strategic planning. Second, planning involves the translation of the broad program objectives into specific policy actions and investments which will allow the achievement of the strategic objectives; it typically is done at the lower levels of an organisation and is known as operational or tactical planning. Strategic plans provide the boundaries for operational planning.

The importance of a thorough and systematic problem identification as the basis for effective education change was emphasized by Dalin (OECD/CERI, 1973) in his analysis of educational change programs in the OECD countries. In about 80% of the cases, the selection of program objectives was based on a preceding analysis of issues and development prospects in the education sector, often carried out by Bank or UNESCO/Bank Cooperative Program staff. In several countries -- e.g., Ethiopia, China, Thailand and Paraguay -- governments were deeply involved in this process. In those cases, national staff frequently took a leading role in analyzing key issues and formulating the policy objectives. With few exceptions successful programs were based on in-depth sector analysis. Yet, official long-term plans, while often prepared in considerable detail, served mainly to define strategic parameters, and affected the design of investment projects only in a very broad sense. In Malawi and Thailand, the strategic planning process was extremely ad hoc and programs gradually evolved in the general direction of nationally set objectives, which also shifted over time.

The Malawi Correspondence College (MCC) program evolved slowly over a twenty-year period as the political and educational advantages of the program became increasingly clear to the Government. Initially there was no long-term plan and little effort was made to adjust program content or teaching methods to local conditions or to the specific requirements of distance teaching. However, a strategy developed gradually as the MCC's effectiveness and popularity increased.

During the 15-year implementation period of Thailand's diversified secondary school project, the program objectives shifted from narrowly focusing on the labor-market performance of graduates to general skill development and attitude change. And implementation strategies evolved as the program focus shifted from relatively large non-rural schools to small rural schools.

The cases show that it is important that strategic program objectives are firmly grounded in analysis and linked with central educational development priorities. Detailed long-term planning seems futile, especially in the often volatile environment of the developing countries.

For the programs included in this review much of the operational planning took place as part of the preparation of Bank projects, in accordance with Bank procedures and guidelines. Traditionally, preparation of educational development projects for Bank financing has followed the infrastructure model and emphasized the detailed preparation of specifications for inputs, costs, and implementation schedules of the investment proposed for Bank financing.

These procedures reflect what Chin and Benne (1961) have labeled the "empirical-rational" perspective of educational change. It has strong technocratic features and assumes that generally applicable solutions can be developed to address educational problems and that individuals or groups will react rationally when data show that the change is well justified and that they will benefit as a result. Performance objectives will thus be realized automatically, provided there are no problems with input procurement or delivery. From this perspective, implementation planning emphasizes the delivery of inputs on time and within cost. Adherence to the implementation schedule is the measure of success. Deviation is then attributed to "management problems" and weak institutions at the center.

This "technocratic" approach continues to characterize much of the preparation and implementation of Bank projects -- including those in the sample -- in spite of the fact that many successful as well as unsuccessful ones undergo major changes in implementation strategy and sometimes in objectives as well. This does not mean that implementation planning is not important. It obviously is and the most successful programs had levels of traditional preparation that were reported by the appraisal mission to be well above the then prevailing standards in the Bank. Yet, this traditional preparation work needs to be complemented by institutional analysis. In several of the high outcome cases, preparation paid a particular attention to institutional issues and the capacity to manage change and deal with unexpected events.

The YAR preparation reflected this approach in an annex to the staff appraisal report for a proposed second education credit (1975). It focused on the institutionalization of an implementation capacity, demand mobilization strategies, and criteria for the design of sub-projects, rather than on the detailed costing of inputs. During implementation, program managers were able to respond effectively to a variety of unanticipated issues and modify the program design as implementation lessons became available.

Furthermore, in several cases (e.g., Haiti and YAR), there was a global strategy for program implementation that specified in considerable detail: (i) a strategy and time-table for expansion of the program coverage, (ii) the relationship of the project objectives to this overall program strategy, and (iii) an explicit identification of the unresolved issues that were to be explored by the project.

Experimentation

In 1978, the Bank was advised by its External Advisory Panel on Education to increase its support for "introductory testing and experimentation to provide reasonable assurance that a large-scale second phase is unlikely to result in major mistakes" (The World Bank, 1978). The analysis of the programs in this sample provides strong support for this recommendation. Nearly half of the 21 cases was based on, or provided funding for, experimental testing. Three different approaches to experimentation were identified: (i) small-scale experimentation, (ii) limited testing, and (iii) first-phase experimentation.

Small-scale experimentation is typically designed to test the effectiveness of an innovation in a few classrooms under relatively controlled conditions and to provide an empirical basis for deciding whether or not to adopt the innovation for general application.

The primary education curriculum reform project in Tunisia is a good example. Before a decision to apply the innovation nationwide was made, an experiment to test the revised curriculum content was mounted in 27 schools. After the field test was considered to have been successful, the government decided to generalize the program to all primary schools.

In Liberia, the Community Schools Program had initially been piloted with UNDP support. The Bank-supported project was designed to expand this pilot experience while modifying some of its less successful features.

In YAR, the Bank decided to support a small-scale experiment with a nonformal education program. When the first attempt ran into difficulty, the pilot was redesigned, successfully implemented, and gradually generalized.

Limited testing follows the decision to adopt the change and is designed to test a specific innovation (e.g., a new textbook) in a few classrooms or schools, and to enhance its relevance and effectiveness for general application.

The textbook component in Lesotho financed the initial supply and distribution of nearly two million textbooks. A pilot distribution was planned to begin in 1982, followed by national distribution in 1983.

Similarly, in Ethiopia, considerable testing of revised curricula took place prior to generalization.

First-phase experimentation is conceived as the initial phase of a long-term, large-scale operation during which the innovation is tried out in a large number of schools.

The Pakistan and Bangladesh primary education programs were both designed as large-scale experiments that covered about 10 percent of the primary schools to test the effectiveness of a variety of reforms aimed to increase access and improve quality.

The first approach, small-scale experimentation, significantly differs from the other two types of experimentation in that it precedes the initial decision to adopt the program. Thus, a program may initially start as a small-scale experiment, prove successful (often after redesign), be adopted by the government, and then be launched as a first-phase project. In both Thailand and YAR, first-phase projects followed small-scale experimentation.

Several programs bypassed the experimentation stage entirely and

were implemented directly on a moderate to large scale -- these reflect the "direct application" approach.

Table 5.2 shows the distribution of experimental approaches and outcomes of the sample cases.

Table 5.2: Experimentation and Testing in 21 Bank-Supported Educational Change Programs

Outcomes	Small-scale Experimentation	Limited Testing	First Phase Experiment	Direct Application	
High/Moderate	Tunisia Morocco YAR Thailand	Ethiopia Lesotho Haiti	Pakistan Bangladesh YAR Thailand	China Guatemala Haiti	Egypt Indonesia Senegal
Low	Liberia Benin Paraguay			Nicaragua Mali Malaysia	

The effect of prior small-scale experimentation on project outcomes is ambiguous. In nearly every case, the Bank appraisal mission was not satisfied with the results of previous experimentation (where they were available). Consequently, projects in Tunisia and Benin, for example, were substantially redesigned during preparation and appraisal. Such redesign is risky if the project then moves directly to a direct application strategy. Changing the design of a program that is encountering implementation problems may help to avoid the old problems, but provides no guarantee that new ones will not arise. Thus moving from an experiment

with unsatisfactory outcomes to general application of a redesigned program sacrifices the advantages of experimentation. Ideally, a small-scale experiment that highlights problems should be redesigned and retested before its adoption as a larger scale program. Only after an experiment has proven successful should it move to a direct application strategy or a first-phase experiment (as in Thailand and YAR).

The success of programs that incorporated limited testing or first-phase experimentation suggests that an incremental approach to program implementation is often highly effective. These types of experimentation capitalize on "learning-by-doing" (Verspoor, 1985), and allow a substantial degree of program transformation and adaptation.

Of the programs that moved directly into the application stage, 67% had high or moderate outcomes. However, most of these were reasonably straightforward innovations that applied relatively well-known treatments. The main challenge for these programs was effective service delivery.

The Lesotho textbook program shows that even in the case of innovations representing a limited deviation from existing practice there are considerable advantages to testing a highly structured and programmable activity like textbook distribution on a small scale, prior to large scale application.

Preconditions

Successful educational change requires striking a balance between the need for improvement and a country's capacity to implement a particular

change (Verspoor, 1986). The capacity of the system to handle an educational innovation is determined by at least three factors. The first is previous experience of planners, administrators and teachers with change. The second is the organisational strength of the system, i.e., the capacity to bring about compliance with national policy objectives at all levels of the educational system. The final factor is the degree of professionalism of educators and institutions in the country.

Experience: Havelock and Huberman (1978) point to the "lack of prior experience" as a major constraint to implementing change in developing countries. Only a few countries in the sample had experience with the implementation of educational change: Malaysia, Thailand, Indonesia and Paraguay. But even in those countries, it is not clear to what extent experience with implementing change had spread throughout the system.

However, prior experience can be (and often is) an obstacle to change when the experience has been negative. Fullan (1982) describes the problem in the North American context:

In general, teachers and others have become skeptical about the purposes and implementation support for educational change (and over the past fifteen years they would have been right more times than not -- "a rational" response). (p. 63)

Dalín (OECD/CERI, 1973) also concluded that teachers were often rational in their resistance to change. He found:

Those teachers who want to become involved in new activities soon come up against problems. (p.194).... Many so called "barriers" in innovative work are the result of new structures and procedures which have been introduced into a stable system designed for other conditions(p. 195).

Teachers in developing countries have probably fared even worse than their North American and European colleagues. They have often heard promises of great change that were not followed by any action at the school level. In the end, breaking through this barrier of skepticism, and developing both teacher confidence in the possibility of improvement and competence in implementing educational innovations may be the most important (although hardest to measure) outcome of successful change. This may set the stage for the subsequent implementation of more ambitious projects.

Organizational strength: Several countries, such as China, Ethiopia and, to some extent, Lesotho, had relatively effective administrative structures and systems. These allowed for effective supervision of and support for staff responsible for applying the change in the classroom. These administrative structures/systems could also handle the often complex logistics of procurement and distribution of supplies and materials to a large number of dispersed sites. Other countries had much weaker administrative foundations and therefore needed to pay considerable attention to administrative development as an essential element of the educational change strategy. In projects with ambitious geographical coverage objectives, such as Bangladesh, YAR, Haiti, and Pakistan,

organisational strengthening was specifically emphasized as part of the investment program (Chapter VIII).

Professional capacity: The professional competence of key institutions and individuals in the sector is the third factor closely associated with national capacity for change. Especially in programs that aim at substantial curriculum change, there is no substitute for a competent national professional staff. Institutional competence in the fields of curriculum and materials development and teacher education will often determine the size and pace of the generalization of change programs.

Ethiopia is a case in point. Between 1970 and 1974 the capacity for curriculum development, materials development, teacher training, school construction, project management, and educational planning was gradually developed by three Bank-financed projects through assistance to the National Center for Curriculum Development, the Educational Materials Production and Distribution Agency, the Ethiopian Building Construction Authority and the Project Management Organization. The capacity for educational policy analysis and planning was strengthened through assistance to the Educational Planning Unit in the Ministry of Education and by support given to an education sector review carried out by the Ethiopians in 1972. When the implementation of the reform began in 1974 these institutions were ready for the task.

Summary

Successful change programs were initiated under a wide range of different conditions, with respect to both the external environment and the capacity of the education sector. The critical challenge in designing a program is achieving congruence between constraints and opportunities

created by the external environment and the institutional and educational demands of the innovation.

High outcomes were achieved by programs adopted on the basis of internally -- as well as externally -- driven policies. In countries with a well-developed political and administrative infrastructure, the initiation of the change program was typically internally-driven. But the fact that the program is internally driven is not sufficient for success.

High-outcome programs were typically firmly grounded in a diagnosis of key issues confronting the (sub)sector, which provided the strategic framework for the design of specific policy measures and investment projects. These investment projects were generally well-prepared in a traditional sense. But the most successful ones went beyond that. These projects focused their preparation on the institutionalization of a capacity to manage change and the development of systems and structures capable of dealing effectively and flexibly with unexpected events, within the strategic parameters developed through the long-term planning process.

Many of the more ambitious changes had an initial phase of piloting and testing. In several instances, experimentation followed rather than preceded the decision to adopt a change program. Sometimes, project design changes made after initial experimentation were so significant that they reduced the uncertainty of outcomes only marginally.

High outcomes clearly can be achieved by programs that have very different starting points in terms of institutional development and national commitment to project objectives and design. While these initial conditions and processes do not directly affect outcomes, they do affect the choice and design of the implementation strategy. Choosing an implementation strategy that is most appropriate for the nature of the program for the capacity of a system to implement innovation and change, and for the nature of the environment in which the program has to be implemented is critical for success. The next chapter examines the different strategies, or pathways, that lead to successful educational change.

VI. IMPLEMENTATION STRATEGIES: A FRAMEWORK FOR ANALYSIS

Implementation is the process of putting a program into practice. In the case of educational change, this process is both technically and socially complex. Its technical complexities are caused by the idiosyncratic nature of teaching and the limited knowledge of effective ways to enhance student achievement, particularly in developing countries. Its social complexities stem from the large number of people involved in the education system and the unpredictability of their behavior. As noted by Fullan (1982):

A large part of the problem of educational change may be less a question of dogmatic resistance and bad intentions (although there is certainly some of both) and more a question of difficulties related to planning and coordinating a multilevel social process involving thousands of people. (p.55)

Israel (1987) has also illustrated the enormous handicaps under which the social sectors operate. He has identified two factors which help explain the success and failure of institutional operations: specificity and competition. Activities with low levels of specificity and competition (i.e., low technology, people-oriented services such as education) lack the incentives necessary for effective institutional performance.

The technical and social complexities of innovation in the education sector result in an implementation process fraught with uncertainty. Dealing effectively with this uncertainty in the financially constrained and often politically turbulent environment of developing

countries is a major challenge for the designers and managers of educational change programs. This chapter reviews the strategies used to respond to this challenge.

Analytic Framework

The analysis uses a contingency approach, which explores not which strategy is correct, but under what conditions each applies. The core elements of the model have been described by Middleton, Rondinelli, and Verspoor in their paper "Designing Management for Uncertainty and Innovation in Education Projects" (1987). That paper discusses the impact of management considerations on the design and feasibility of education projects. It focuses primarily on the design of management structures and systems for different types of education projects and argues that two sets of contingency factors critically affect the design of project management arrangements: (i) factors related to the nature of the tasks involved in the program, specifically the degree of innovativeness (i.e., the size and scale of change); and (ii) factors related to the external environment which the project is implemented (i.e., the stability and complexity of the political and economic conditions affecting the project). This same set of contingency factors was found to be helpful in analyzing the strategies employed in the sample cases. The findings of the analysis show that under certain conditions a particular strategy is more likely to succeed than others, providing important guidance for the design of implementation strategies.

The model presented in this chapter is based on research findings on both the organizational design of manufacturing and service organizations, and educational change in developed countries. Specifically, it draws on Duncan's work (1972, 1979) regarding the relationship between organizations and their environments, Perrow's analysis (1970) of different types of technology, and Israel's research (1987) on institutional development. Research on educational change used in the model includes the work of Dalin (OECD/CERI, 1973), Berman and McLaughlin (1978), Crandall and Associates (1982), and Miles and Huberman (1984).

This model is intended to bring some order to the thinking about the complex reality of educational change in developing countries. Because each contingency factor is an aggregate of sets of sub-variables (Middleton, et al., 1987) that interact in different ways under different conditions, categories tend to overlap and cannot be precisely demarcated - - this reflects the unwieldy complexities of the real world.

A Model for Change

The environmental contingency factors that most directly affected the implementation of the programs in the sample were economic and political factors. The global economic crisis, the disappointing economic performance of many developing countries, and the resulting constraints on government budgets created, in many instances, major obstacles to the implementation of the change programs, forcing cutbacks in either the scale

(i.e., geographic coverage) or the size (i.e., deviation from existing practice) of the program. For example:

The government of Senegal, already forced to reduce the number of science centers to be constructed from 11 to 8 (due to delays in the design stage and higher-than-expected inflation) found it difficult to provide adequate recurrent funding to the centers, even though the program was applied on a limited scale. Consequently, expanding coverage of the program has not yet been feasible.

In Liberia, the recurrent cost implications of the community schools turned out to be too much for a government facing a severe financial crisis. The program never got off the ground and was eventually abandoned.

Other programs were strongly affected by political factors.

The basic education reform in Haiti had several controversial elements, the most notable being the use of Creole as the language of instruction in the first four years of primary school. This was actively opposed by the French speaking urban elite; consequently, implementation was delayed.

Political events in Nicaragua, which eventually brought a revolutionary government to power, first impeded progress of the program, but later provided strong impetus to implementation.

The degree of innovation is a function of both size and scale of the program, and ranges from highly ambitious to limited or narrowly focused changes. Although scale is easily measured, size is less so because it is a relative concept that needs to be assessed in relation to existing practice. What may be highly innovative and demanding for teachers in one country may be relatively routine for teachers in another. Beeby (1964) has pointed out that existing levels of education, training and experience of the teaching force are major constraints on the degree of

innovation or, in his words, the "gradient of change" that can be successfully introduced into an educational system.

Combining the two contingency factors into one matrix provides four different combinations of environmental uncertainty and program innovativeness. Table 6.1 shows this contingency matrix. Each of these combinations calls for a particular implementation strategy -- a pathway to change -- to achieve optimal program outcomes. The one exception is the situation in which both the degree of innovation and environmental uncertainty are high. These conditions are not conducive to an effective implementation strategy; rather, they encourage a reactive strategy which essentially buys time postponing large-scale implementation until environmental factors improve.

Table 6.1: Implementation Strategies

		<u>Degree of Innovation</u>	
		low	high
<u>Environmental Uncertainty</u>	low	progressive innovation	incremental expansion
	high	discrete change	permanent pilot

The upper boxes of the matrix represent scenarios that allow for the implementation, over a number of years, of major change programs with ambitious educational and coverage objectives. The combination of variables in the lower boxes permits only the implementation of programs

with much more modest change objectives or the limited implementation of ambitious programs. The implication of the matrix is that implementing major educational change requires a reasonable degree of environmental stability. Environmental uncertainty -- economic upheavals and political turbulence -- virtually prevents the implementation of ambitious change programs and makes the adoption of more modest goals inevitable. But environmental uncertainty does not preclude successful implementation, provided it is taken into account in the selection of the objectives and the implementation strategy of the program. For example, the assurance of substantial external financing over a long period could insulate a program from short-term internal economic shocks, and thus reduce the risks associated with environmental uncertainty.

As shown, the four implementation strategies that emerge from this matrix are:

- (i) progressive innovation, a strategy that is designed to implement in a large geographic area (a country, state, or province) a number of successive changes, each rather modest in itself, which, when taken together, result in considerable change over time; the long-term objective is comprehensive and large-scale reform;
- (ii) incremental expansion, a strategy geared toward the implementation of ambitious educational goals in a gradually increasing number of schools; the long-term objective again is comprehensive and large-scale change;
- (iii) discrete change, the traditional project approach which implements the change program in a limited number of schools without clearly specified generalization objectives; and
- (iv) permanent pilot, programs that aspire to national coverage and show promising results in the pilot phase, but do not manage to mobilize enough support and/or resources to embark on nationwide application.

Table 6.2 on the next page describes the various characteristics of the four implementation strategies. Progressive innovation strategies are usually well-structured and rational; they fit well with the typical mechanistic management model of the education bureaucracy yet because of their national objectives demand a considerable institutional capacity. Incremental expansion strategies are the most common in the sample, and probably in the education sector in general. With this strategy, program implementation stretches over a long period, often 10-20 years. Program design usually changes considerably in light of implementation experience. Program management is flexible and relies on inputs from education specialists to process feedback. The institutional capacity to manage change can be developed gradually. Discrete change strategies pursue more limited objectives, are usually quite structured, and the management challenge is to implement the project plan in the face of environmental adversity. Permanent pilots are designed to try unfamiliar educational technologies and learn from experience; they are often fairly open ended. The main challenge with this strategy is to make the transition to a large-scale program which involves dealing with a whole set of new issues.

It should be kept in mind that no one strategy is always better than the others. The challenge is to design a strategy that is optimal, given the particular environmental conditions and the objectives of the change program. This requires careful analysis of both the uncertainties in the environment that the change program will be facing and the nature of the program. A structured approach to assessing these contingency factors has been proposed by Middleton, et al. (1987).

Table 6.2: Characteristics of Implementation Strategies

<u>CHARACTERISTICS</u>	<u>Progressive Innovation</u>	<u>Discrete Change</u>	<u>Incremental Expansion</u>	<u>Permanent Pilot</u>
long-term objectives :	ambitious	undefined	ambitious	open ended
program focus :	national application	a few schools	effective treatment	program development
initiation :	internal	mixed	mixed	external
educational goals :	modest	modest	high	high
coverage target :	all schools	a few schools	gradually increasing	specific test sites
program technology :	known treatment	known treatment	evolving	untested
impl. requirements :	high	modest	high	modest
impl. focus :	project	project	program	project
management model :	mechanistic	open/mechanistic	professional/adaptive	organic
critical activity :	compliance	application	development	learning
program transformation:	marginal	low/moderate	moderate/high	high
planning emphasis :	detailed operational	coping	incremental	muddling through
government commitment :	high and consistent	fluctuating	high and consistent	wavering, often personal
anticipated follow up :	more ambitious innovation	another project	more program schools	generalization
dominant skill needs :	managerial/administrative	school managers	professional/administr.	professional

Table 6.3 displays the cases according to dominant strategy and implementation outcomes. The 10 cases with the highest implementation rating are marked (Chapter 12); The other 11 cases are marked (L). The high outcome cases (H) adapted implementation strategies congruent with the environment and the degree of innovation. The low outcome cases (L) did not have such congruence. The following chapter discusses in detail the implementation strategies as used in each case.

Table 6.3: Distribution of Cases by Implementation Strategy

		<u>Degree of Innovation</u>			
		low			high
<u>Environmental Uncertainty</u>	<u>Progressive Innovation</u>				
	Ethiopia (H)	Thailand (H)	Benin (L)		
	China (H)	YAR (H)	Indonesia (L)		
	Lesotho (H)	Malawi (H)	Liberia (L)		
	Malaysia (L)	Tunisia (H)			
		Bangladesh (H)			
	<u>Discrete Change</u>				
	Egypt (H)	Haiti (L)			
	Senegal (H)	Pakistan (L)			
	Guatemala (L)	Morocco (L)			
Mali (L)	Paraguay (L)				
Nicaragua (L)					
high					

Summary

There are different ways to implement programs aiming at significant educational change. The external -- political and economic -- environment will determine to a large extent the feasibility of implementation of significant educational change. The change strategies of the sample programs could be classified in four categories, reflecting different combinations of "environmental stability" and "degree of innovation". These categories help explain the quality of strategic design decisions such as choice of program objectives, the breakdown of the program in manageable parts, and the sequencing of the implementation of these parts. A high outcome strategy matches these strategic design decisions with the contingency variables. The next chapter will review the case experience in light of these strategic categories.

VII. IMPLEMENTATION STRATEGIES: CASE EXPERIENCE

The classification of the cases presented in the previous chapter is of course only an analytical device. Few cases represent pure strategies. Most combine the characteristics of two strategies, and some gradually shifted from one strategy to another over time. In this chapter, "pure" strategies are presented with supporting evidence from the cases, followed by a brief discussion of some of the dynamic aspects of the implementation experience.

Progressive Innovation

A strategy of progressive innovation is characterized by the sequential implementation of a series of relatively modest innovations, in the context of a relatively stable environment. Its principal objective is to apply each innovation in all or a large number of schools in the country (state or province) within a comparatively short period of time. The change program is typically internally driven and is often (but not always) associated with the political objectives of nation-building or ideological change. Where implementation of educational change is associated with such political objectives, government commitment is typically high, pressure from the top is considerable, and the longer-term change objectives are very ambitious. These programs are often planned in detail, and progress is carefully monitored by central authorities. Deviations from the plan do occur but they are usually modest and fit within the frame of the predetermined strategic objectives. The Ethiopia and, to some extent, the

China cases illustrate the use of this strategy in support of broad political objectives, while the implementation of educational reform in Lesotho represents progressive innovation in its less political and less ambitious form.

Bank support for the design and implementation of the basic education reform program in Ethiopia currently spans 15 years and has been realized with the assistance of a Bank-supported investment program comprising five consecutive projects. The reform had its roots in the Education Sector Review (ESR) financed under the Second Education Project and undertaken by the Ethiopian Government with the assistance of expatriate experts. While the government was reviewing the recommendations of the ESR, a Bank-assisted education project provided support for an extensive institutional development effort that focused, in particular, on five institutions -- the Curriculum Development Center, the Textbook Agency, the Construction Authority, the Project Management Organization and the Education Planning Unit-- that were to play a major role in the implementation of the reform.

The reform started with a series of innovations aimed at improving the quality of elementary education. While many of the elements of the reform were, to some extent, anticipated in the early planning stages, the implementation process clearly followed a phased pattern of increasing complexity. First, textbooks were provided to all primary schools, followed by a program of curriculum reform that initially focused on academic subjects, but later increasingly emphasized manual work as an integral part of the elementary school program. These reforms were supported by radio broadcasting in the next stage. At later stages of the process, the emphasis shifted to the introduction of local language teaching, double-shifting in lower secondary schools, new methods for the evaluation of student achievement, and the provision of a broad range of educational materials (including science kits) to all elementary schools.

Implementation was supported by effective in-service teacher training programs and a strengthening of the administrative organization. In conjunction with this quality improvement program, the Government, with Bank support, initiated a major primary school construction program to increase access to education in rural areas.

The China program consists of a series of investments directed at improving the quality of higher education. The initial phase, supported under the First Education Project by the Bank, was lin-

ited essentially to the provision of equipment and staff training for faculties of science and technology. Subsequent projects not only had increasingly ambitious change objectives aiming at improvements in institutional management and support services (libraries, for example), but also broadened the scope by extending the program to departments of agriculture, medicine, engineering, economics, finance, social sciences and teacher education. The most recent university development project approved by the Bank (1985) continues in this direction and is assisting provincial universities in expanding enrollments, improving academic programs, and reforming management.

In Lesotho, a Bank-supported program was designed to gradually build expertise within that country's National Curriculum Development Center (NCDC). The textbook program, funded under the Third Education Project, adopted a three-stage implementation strategy consisting of: (i) the purchase of books in use in other African countries; (ii) the adaptation of those books; and (iii) eventually, the development of original Lesotho textbooks by NCDC staff. This strategy allowed the gradual buildup of national expertise in the NCDC and other agencies involved in the textbook program, while at the same time, meeting the urgent national need for primary textbooks.

The desire for rapid nationwide change, which is characteristic of this strategy, means that implementation requirements are usually demanding and that the time available for testing and experimentation will be limited. Under these circumstances, two courses of action were associated with success: (i) reducing the degree of innovativeness of the change program in the early stages; and, (ii) giving particular emphasis to establishing the organizational structure necessary to support and supervise implementation at the school level. Lesotho, for example, limited the objectives of the initial stages of its textbook program to reflect the limited institutional capacity in that country's education sector. In Ethiopia, on the other hand, successful implementation of a relatively ambitious innovation was greatly helped by the priority given to strengthening educational institutions and administrative structures.

The change programs in the countries that adopted a strategy of progressive innovation thus consisted of a series of relatively modest changes, whose effects could be predicted with reasonable accuracy. The implementation of such programs typically involves only a limited number of major unexpected events. These programs are not only centrally planned, but can also be managed by a relatively traditional, mechanistic organization (Middleton, et al., 1986) with clearly spelled out procedural rules and controls. Nevertheless, the scale of these programs is such that the demands on the organization responsible for implementation are considerable, and special efforts to strengthen the administrative and institutional capacity are often required.

In Ethiopia, institutional development programs had been implemented since the early 1970s and resulted, by 1976, in a well-established national capacity for planning, curriculum development, materials development and project management. In addition, in the initial stages of implementation, a determined effort was made to develop a decentralized school supervision and support system at the district (awraja) level. The Awraja Pedagogical Centers (APCs) provide school supervision, coordination, in-service teacher training, program evaluation, advice and work on curriculum modification, assistance on the development and use of teaching aids, research, and other support services for schools. The APCs also serve as the distribution points for new educational materials and provide assistance to both the formal and non-formal education programs. Furthermore a deliberate effort was made to strengthen local support and control of the school through peasant and urban dweller associations.

Even in China, which from the outset had relatively well-developed organizational structures, considerable attention was given to organizational strengthening. First, the government set up an internal group of experts and an external advisory panel to assist university staff with the use of new equipment and the teaching of revised programs. Second, project initiated studies were conducted regarding the reorganization of university management, and specialists were then employed to develop and introduce improved management techniques and practices concerning rescheduling staff time and use of facilities, operating libraries, recording keeping, and program budgeting. Each

management innovation was piloted and, if judged successful, extended to other project institutions.

The project in Lesotho was much less ambitious, but again its design paid considerable and explicit attention to the development of an administrative infrastructure -- at first temporary and later permanent -- to manage the procurement, development, and distribution of textbooks. The project called for both the creation of new bureaucratic entities and the realignment of existing ones. In addition to formulating a textbook-fee policy, the Ministry of Education established and staffed a Book Supply Unit. The National Curriculum Development Committee and the Instructional Materials Resource Center were reorganized to ensure their effective coordination in implementing the government's textbook policy.

The implementation of innovations that are relatively modest in size under conditions of environmental stability often appears simple from a central perspective. In fact they are complex because of the difficulty in bringing about effective use in a large number of schools in many different locations. When the perspective on use at the school level gets lost, the innovation is headed for failure. The case of the Education Radio and Television Program (ERTV) in Malaysia is an illustration.

During preparation and appraisal of this project much of the attention was focused on technical issues of program production and broadcasting. Although 13 Educational resource Centers were set up, access to these centers was difficult for many teachers and the quality of the service was frequently poor. In fact, acceptable levels of usage occurred only in schools where a teacher had been specifically assigned to coordinate the ERTV program and where the headmasters were supportive. But even in these schools the quality of usage remained poor: students were rarely prepared and watched the program passively and generally no follow up took place.

In this case the deviation from existing practice was underestimated. No attempt was thus made to break down the innovation into smaller more manageable parts to allow for testing of program content and delivery mechanisms. Poor fit between the degree of innovation and the strategy led to low outcomes.

Incremental Expansion

An incremental expansion strategy takes an evolutionary approach to the implementation of educational change. There is less pressure for immediate action, fast results, and large-scale application than in the case of the progressive innovation strategy. Typically, after small-scale experimentation of a major change -- often supported by external donors -- the decision is made to move towards national application. However, organizational, financial and human constraints make immediate national application impractical. National application is further impeded by uncertainties regarding the nature of the outcome of the experiment, the need for further redesign and testing prior to application of the change on a large scale, and the reluctance of donor agencies to support large-scale, high-risk programs. As a result, the change is applied in a limited number of schools during a first phase, and then gradually expanded over time.

Long-term plans are usually vague and open-ended; in many cases, the innovation evolves and decisions are made as program implementation progresses. The time perspective is often long -- 10 to 20 years or more before full application is no exception -- and during this period, considerable transformation of the innovation takes place. Most of these adaptations are in fact simplifications that gradually occur in response to the realities of classroom application. The implementation of a program over such a long period demands consistent commitment by the government and external funding agencies to the program objectives. The cases of Thailand, YAR and Bangladesh illustrate this process.

Experiments with the diversification of secondary education in Thailand had been supported by the Canadian International Development Agency (CIDA) since the late 1960s. As the original CIDA model was found to be too costly to replicate on a large scale, modifications aimed at cost reduction and simplification were introduced. In 1973, the government decided to generalize the program and the Bank has supported the gradual expansion of the program through four education projects, which have financed the introduction of diversified curricula in the 124 new secondary schools built under the project, as well as in 480 existing secondary schools.

Over time, the program underwent considerable transformation, both in terms of its objectives and design. Initially the stated program objective was to prepare students more effectively for employment in the labor market. This objective evolved gradually, and at present, broad skill development and attitudinal objectives are more strongly emphasized. The project design also changed considerably in response to the need to reduce both the cost and the complexity of the program and to adapt it to conditions in different locations. For example, the Fifth Education Project not only called for the construction of 42 schools, but also included provisions for 12 Area Vocational Centers. These regional centers provide practical instruction to students from general academic secondary schools (feeder schools). They represented an attempt to provide diversified secondary education to students enrolled in small secondary schools in a cost-effective manner. The Sixth Education Project continues to work in this direction and to provide assistance to address the problem of providing diversified secondary education in small rural secondary schools. Strategies include providing new and renovated facilities for in-service staff training, and improving teacher utilization through an increase in weekly teaching loads.

The first primary education project in Bangladesh has generated especially impressive gains considering that previous development efforts in this subsector had a poor record of achievement. The project is part of a long-term overall development program to expand access and improve the quality and efficiency of primary education. Although the goal of simultaneous expansion and quality improvement has been consistently pursued, tactics and interventions proposed in the follow-up primary education project have been modified in response to lessons learned and long-term fiscal considerations.

Constraints on implementation capacity and financial resources limited the coverage of the program in the first phase to 10% of the country, an area small enough to avoid the difficulties common in large-scale innovations, yet large enough to yield significant lessons. This also allowed the change strategy to be quite comprehensive. Included were the provision of school

buildings, textbooks and materials, the training of supervisors, experimentation with Project IMPACT (Instructional Management by Parents, Community, and Teachers), and recurrent teacher training. The phased implementation schedule provided for preparation during the first year of the project, allowing time for initial staff training, materials development, construction, and collection of baseline data. Implementation began during the second year and continued for four years.

Program results were analyzed during the subsequent six to nine months. Outcomes of the program were encouraging as both physical and educational targets were met. The teacher training program is being expanded nationwide with the assistance of a follow-up primary education project. Project design has been modified to incorporate lessons learned from the First Primary Education Project. For example, the provision of free textbooks and uniforms could not be sustained, so book fees have been introduced, and the uniform program has been dropped.

The case in YAR is particularly illustrative of the evolutionary nature of the incremental expansion approach. The Basic Training Scheme (BTS), now a thriving system for the delivery of basic vocational skills and literacy training to rural areas through District Training Centers (DTCs), had its roots in the First Education Project, which included a small experimental non-formal training component. As non-formal education was not one of the government's priorities at that time, the objectives of the pilot program were initially poorly appreciated by the government and the implementation strategy was inadequately thought through. Although implementation did not take off, Bank staff maintained confidence in the feasibility of the BTS content, and redesigned the implementation strategy in the belief that the BTS program objectives were in line with the country's needs. The revised design was highly flexible and focused on meeting expressed needs of beneficiaries. As implementation proceeded, lessons from experience were learned and applied.

Initially, the scale of the program was kept small to provide ample opportunity to experiment and learn from experience. Three DTCs were built under the First and Second Education Projects. At both the national and local levels, supporting institutions (district community councils, and the National Board for Non-Formal Education) were created. Also, a Basic Training Fund (BTF) was established to finance village training programs. This has proved to be a flexible tool and a major incentive to local development groups. In the Fifth Education Project, efforts were intensified to increase the number of Yemeni teaching staff by appointing graduates of the technical secondary school to be counterparts to DTC instructors and by recruiting local trainers. The structure of the BTF was also modified to provide less stringent conditions for the funding of training programs requested by the local communities.

These cases illustrate the considerable advantages of the incremental approach to program implementation. It provides the opportunity for the gradual development of institutions and training of professional and managerial staff. Staff who have worked on early program sites can be transferred and used in the program implementation at later sites. The initial demands on a country's organizational structure are therefore not as great as they are under a strategy of progressive innovation. Institutions can gradually acquire the experience necessary to manage the physical and educational aspects of the program and to develop a professional capacity in these areas.

Several cases illustrate how both the failure to break down the program into -- educationally and administratively -- manageable parts and the impact of environmental turbulence can lead to low outcomes.

In Benin the rural education training program was designed as a first phase experiment in two provinces. Future geographic coverage was anticipated. The redesign of earlier experiments had been substantial and the experience with the program as designed was limited. The scale of the operation that was undertaken was so demanding in comparison with the national administrative capacity that logistical and hardware issues completely dominated the attention of program managers.

In Indonesia the decision to recruit individuals from a large number of different institutions for a residential in-service training program rather than introduce the change institution by institution fatally flawed the dissemination process, thereby negating the success of the in-service training program. Selecting improvement of individual teachers rather than institutional improvement precluded an incremental expansion strategy called for by the size of the innovation.

The introduction of technology instruction in primary schools in Morocco was successfully implemented as a small scale pilot. Yet considerable concerns existed about the program's recurrent cost implication, especially in light of the deterioration of the

country's economy. The government was therefore reluctant to proceed with generalization of the program. Instead it was agreed to undertake some more experimentation in a limited number of schools.

Discrete Change

Environmental uncertainty limits the time horizon for achieving educational change and constrains the probability of implementing a consistently-supported longer-term change strategy. The principal factors that cause environmental uncertainty are political and economic. As a result of environmental uncertainty, change takes place in discrete "chunks" that are often not sequential. If a sustained effort does occur, it is by accident rather than design. Environmental turbulence precludes the consistent and systematic pursuit of change objectives necessary for the successful implementation of ambitious and large-scale innovations. Under these circumstances, the optimal strategy is to limit the size and scale of the innovation.

The discrete change strategy typically has a very strong project orientation aimed at well-defined, relatively routine innovations with limited coverage in terms of the number of schools expected to apply the innovation. Nevertheless, transformations in program objectives and design frequently do occur in response to changes in the environment. In order to cope with environmental change, efforts must be directed at assessing environmental "signals" and responding appropriately. Changes in the economic environment were particularly severe during the mid-1970s when many of the sample projects were implemented. Some projects coped

effectively with these changes and preserved the essence of the change program. For example:

In Senegal the deteriorating economic environment had two effects on the implementation of a secondary science and technology program. First, implementation delays in a period of rapid inflation and declining value of the dollar forced a cutback in the number of schools that were to apply the new program. Second, during implementation, it became clear that increasing constraints on funds for non-salary inputs posed an obstacle to the sustainability of the program. To promote chances for the program's survival in this hostile environment, program managers redesigned the program to hold down recurrent costs. This was done by limiting the use of sophisticated and fragile equipment and creating an equipment maintenance and production center. In addition, program achievements were widely publicized in order to build support among parents and senior government officials.

Although the program has now become well-established, coverage remains limited. High priority has been given to integrating the innovation into the curricula of the participating schools, but little attention was paid to preparing for program expansion. In spite of the fact that the centers were considered successful, external donors have shifted their attention to other levels of education and no plans exist at the moment for further expansion.

Other programs did not respond to economic changes. For example, the Mali program, similar in design to the Senegal program, resulted in a different outcome.

Mali also faced a severe financial crisis, but neither the expatriate advisers nor the Malian program managers and policymakers reacted to the environmental constraints on program implementation. No attempt was made to redesign the program to minimize the recurrent cost implications, and scant attention was paid to building support for the integrated science curriculum among national professional staff and policymakers. Largely due to this lack of responsiveness to local conditions, the program was only partially implemented and its educational objectives were essentially abandoned.

The dramatic effect of political upheaval on the implementation of education change programs is illustrated in the Guatemala case.

The Guatemala program aimed at the introduction of practical subjects in the lower secondary school curriculum. A combination of factors, brought on by both political instability and natural calamity, militated against the implementation of the reform. From the outset, the program faced a set of critical problems, including poor management, lack of active government commitment, and the 1976 earthquake. Decisions concerning school sites, curriculum content, contract approval, and allocation of counterpart funds were severely delayed. The Technical Coordinators Committee was rendered ineffective by personality conflicts, lack of motivation, and the consequent inability to make critical decisions. After the earthquake, government priorities shifted from reform to the repair of schools, thereby further disrupting the implementation strategy. Implementation delays at that point totaled more than four years.

A change of government in 1982 led to increased official support for the project. The project implementation unit underwent a complete overhaul, after which the reform was able to proceed with satisfactory results. However, application has been limited to project schools, no evaluation of classroom performance has been conducted, and high recurrent costs and uncertain government commitment to secondary education inhibit nationwide application.

Implementation of well-designed, discrete change programs is often the best that can be achieved given unstable environmental conditions. The case studies show that this strategy was not -- and sometimes could not have been -- consciously planned; rather, it generally evolved under the pressure of unforeseen external events. Environmental instability is often hard to anticipate, and few project designs explicitly took into account the environmental constraints under which the innovation would be implemented. Yet, a more careful assessment of environmental conditions would certainly be beneficial and help to develop more effective implementation strategies, and result in the selection of a discrete change strategy whenever appropriate. Two courses of action can be considered in

the face of changing environmental conditions. The first is to foster the managerial skill to recognize changes in the environment, accompanied by both the willingness and the ability to respond flexibly to the unexpected. The second is to take measures to insulate the program from environmental turbulence by, for instance, increasing the level of external funding.

The failure to cope effectively with environmental changes in the discrete change strategy often results in a dilution of the educational content of the program, sometimes to the extent that the innovation becomes unrecognizable and disappears as an innovation altogether. Often the program outcomes are merely a set of completed buildings with an increased capacity to enroll greater numbers of students. This is the down-sizing, or the "blunting," of the innovation that has been described extensively in the literature (see, for example, Huberman and Miles, 1984).

In the case of Nicaragua the positive outcomes reported in the project completion report referred almost exclusively to the successful construction of new buildings.

In Mali, although new science centers were provided and are used to the point of overcrowding, the traditional methods for teaching science were retained, thus eliminating the core of the innovation.

Permanent Pilot

Unlike the three strategies discussed above, the permanent pilot is, obviously, not a preconceived strategy for planned change. In fact, it represents the failure to implement an effective strategy, and usually results from the incompatibility between the demanding implementation

requirements of a comprehensive reform program and unstable environmental conditions. Often initiated with considerable external support and financing, these programs are typically unable to mobilize the internal economic resources and political support necessary for the implementation of a major innovation, and thus are unable to move beyond the pilot stage. While the outcomes of the experimental phase may be promising and generalization considered desirable, uncertainty in the economic environment may make the government reluctant to commit substantial amounts of manpower or money to the program. Or, if the innovation is controversial, politically influential pressure groups may oppose its generalization. In a situation of considerable political uncertainty the government will hesitate to press for the implementation of a controversial reform.

Under such conditions, the pilot program is often kept alive by external support, sufficient to finance additional pilot schools, but inadequate to fund a national program. Often ample justification can be found for another round of piloting since the results of educational experiments and pilots are seldom clear. In addition, more piloting is often the politically expedient choice which permits pacifying proponents of the reform without generating much opposition (Dalin, 1978). The danger is that these programs become simply symbols of good intentions and vehicles to attract external financing, instead of instruments of change.

The implementation of the basic education reform in Haiti illustrates how political difficulties can relegate a program to permanent pilot status. The reform, supported by four Bank education projects, is a comprehensive effort consisting of a

series of interventions sustained over a long period of time. During this period the broad reform objectives did not change, but policies, implementation strategies, and tactics changed considerably. For example, plans to use the schools for adult literacy training and to establish a nuclear management system were dropped. The first two projects (approved in 1975 and 1977) laid the foundation for future reform efforts by strengthening and reorganizing educational institutions. Implementation relied heavily on experimentation and piloting, and plans for incremental increases in coverage were continuously adjusted to the changing political situation. Testing took place over three years with 70 classrooms participating during the first year, 230 in the second, and 600 in the third.

At the early stages, central government support was passive and efforts focused primarily on attracting maximum external financing. Parents and others outside the educational establishment demonstrated little interest in the reform at the outset. But the situation changed dramatically after the 1979 decision to introduce the national language of Creole as the language of instruction. As the French-speaking social and political elite mobilized to oppose the reform, the limited government support that had existed grew weaker. It became increasingly clear that implementation by administrative fiat would not work and that support would have to be negotiated with all groups with vested interests in the educational system (e.g., parents, teachers, administrators, policymakers, and social and political elites). Accordingly, the pace of implementation was slowed to nurture the support of these stakeholders, especially the private sector education system. By 1984, the internal support base had broadened and the government was ready to push generalization more actively. By 1985, nearly 50 percent of first-grade students were in reform classes (70 percent from public schools and 34 percent in private schools). However, government support remains unsteady and the program's future is still uncertain. As of 1985, the Government had not announced its intention to apply the new program in all schools or made clear whether it would enforce program implementation in the private school system.

The permanent pilot in itself is not a road to successful national educational change. To generalize the application of the change, the permanent pilot will need to evolve into a strategy of incremental expansion or progressive innovation. These approaches require, however, that environmental instability be reduced. Politically this can mean the ascendance to power of a strong government that supports the program

objectives, as happened, for example, in Guatemala after four years of exceedingly limited implementation progress.

Another avenue is, of course, to redesign the program by reducing either the size of interventions or the scope of coverage, thereby abandoning or diluting politically controversial program elements or lessening the burden of recurrent funding. For example, the introduction of Creole in Haiti was slowed down and made voluntary for private schools that began to use reform materials in conjunction with a French language curriculum. Another alternative is to opt for a strategy of discrete change, focusing on the application of the program in a limited number of schools which is what happened in Senegal.

Dynamic Aspects of the Model

The implementation histories of the cases demonstrate without exception the complexities involved in the process of educational change. The start-up is nearly always difficult. Even programs that were eventually successful, like those in Thailand, YAR, and Senegal, experienced severe problems in the early phases. These difficulties are often associated with the inexperience of the key institutions responsible for program implementation. The start-up problems are typically underestimated by program designers and the allowance made for unexpected problems is usually inadequate. Even in the developed world, non-trivial change is difficult and start-up difficulties common (Huberman and Miles, 1984). The key issue is how to cope with it. Successful programs overcame

start-up problems through a persistent commitment to the key program objectives by national authorities and international agencies, and a willingness to learn from mistakes and redesign the program elements.

Programs are not usually implemented as designed. The case experience illustrates the limitations on the ability of program designers to produce "blueprints" for educational change. Transformation of implementation strategies and even modification of the initial program objectives are the rule rather than the exception. Thus, developing effective procedures for educational policymaking is not a simple matter. In their design, the successful programs explicitly accounted for the uncertainty created by the degree of innovation and environmental conditions.

Allusions have been made throughout this discussion to the dynamic aspects of the model. Some programs change over time and move from one strategy to another. This is often related to changing environmental conditions or to the fact that teachers and administrators that practice change get better at it and can learn to handle more ambitious change programs. The transition from permanent pilot to an incremental expansion strategy or to a discrete change strategy may lead to eventual successful implementation in Haiti and Morocco. Similarly, the Pakistan program, after seven years and two first-phase experimental projects, is struggling to move beyond piloting and experimentation to settle on a replicable program model that can be gradually introduced with an incremental expansion strategy.

Another strategy transformation is the move from a discrete change approach to progressive innovation. The China higher education program is an example.

This project was designed under conditions of considerable environmental uncertainty: China was undergoing major economic policy transformations and had never before dealt with the Bank. As a result, the First Education Project was designed as a discrete operation, although some elements embodied broader long-term objectives. As the new policies stabilized and China's relationship with the Bank matured, environmental uncertainty decreased dramatically. Subsequent projects were increasingly designed as building blocks in an overall strategy of national higher education development.

The third shift in strategy that can be observed is from incremental expansion to progressive innovation. The case of Bangladesh illustrates this process in motion. While the project began as an experiment in 10 percent of the country, coverage is now being expanded in a follow-on project.

Summary

Significant educational change demands long-term, stable political support. Environmental turbulence effectively precluded the implementation of ambitious innovations. Programs that were effective under conditions of substantial environmental uncertainty did not pursue nationwide policy changes, but focused on improvements in a limited number of institutions (discrete change). Other -- often more ambitious -- programs had promising results in a pilot phase, but were unable to mobilize the necessary support for generalized application (permanent

pilot). Even when the environment was more certain and predictable, the successful change programs further reduced uncertainty by adopting an incremental approach to implementation, either in terms of the innovativeness of the initial reform (progressive innovation) or the geographic scale (incremental expansion). The experience of the successful programs thus suggests that selecting a project design that is congruent with the key contingency variables (environmental uncertainty and degree of innovation), and recognizes that transformations will have to be made is critical to effective change.

The analysis thus far has focused on the setting of objectives and the sequencing of their implementation. These are the strategic issues that need to be dealt with in the design of all change programs. More is needed however. To become operational and affect school and classroom teaching and learning processes, implementation strategies need to focus on specific intervention points. Three were found to be especially critical to bringing about and sustaining changes in the professional behavior of teachers and local administrators: administrative development, in-service teacher training, and building and maintaining commitment. The role of each of these interventions in the change process will be reviewed in the next three chapters.

VIII. ADMINISTRATIVE DEVELOPMENT

The Educational Organization

Administrative development is the process of directed change of the main features of an administrative system (Dror, 1978) which aims at the establishment of an organization's capacity to formulate policy goals, define strategies, and implement policy decisions with increasing effectiveness. Change and innovation can only occur when the elements of the organization delivering educational services are in place and functioning effectively. Successful programs therefore pay considerable attention to strengthening delivery systems and establishing effective structures and processes to manage change.

The educational organization includes a wide array of people and institutions, ranging from ministers and their advisers to teachers and teaching assistants. It includes planning and policy staff (e.g., education planners, curriculum development and examination specialists, and supporting staff), payroll and procurement specialists, civil engineers, and statisticians. All these people work together in institutions that make up the educational organization. Institutions are thus identifiable organisational units, which are generally part of a larger organization, and have specifically defined functions that contribute to larger organisational goals.

Four types of institutions can be distinguished:

(i) planning and policy institutions; (ii) support agencies; (iii) line agencies; and, (iv) operating units. The planning and policy institutions are the professional and analytical heart of the educational organization. These institutions propose and analyze policy options, prepare investment plans, develop new curricula and materials, and design and monitor standards of performance. The support agencies are responsible for much of the logistics associated with delivery of educational services, such as paying teachers, building schools, and printing textbooks and materials. The line agencies, such as district education offices, generally serve as links between the central and operating institutions, supervising the functions of the latter. The operating units, i.e., the schools, perform the core activity of the educational organization which is the direct provision of educational services in a large number of geographically dispersed locations.

Case Experience

In the change programs included in this review, the administrative development process had two broad dimensions. On one hand, it involved the development of capacity at the school level to implement policies and programs that supported nationally-defined change objectives. On the other hand, it was concerned with fostering a capacity at the central (national or state) level to support, coordinate, and control school-level activities. Both dimensions are important. Without an

implementation capacity at the school level, educational change is unlikely to be applied successfully in a large number of classrooms and even less likely to become institutionalized. Without coordination, chaos and dilution of the program are likely to result. Bank projects have devoted varying degrees of attention to supporting the development of administrative capacity at the periphery and the central level (see Table 8.1).

Administrative development consisted largely of efforts to change: (i) the structure of the educational organization; (ii) the information, communication, and evaluation systems; (iii) the institutions; (iv) staff competence; or, (v) the resources available for administrative tasks. Table 8.1 ranks the efforts made by each program to use these administrative development instruments (countries are listed in order of outcome success).

The case studies clearly illustrate that strengthening the administrative capacity of the educational organization is a critical step in the process of successful implementation of educational change. Table 8.1 shows that administrative development and organizational strengthening were salient features of the successful change programs. The relative neglect of organizational strengthening in low-outcome programs is striking and suggests that organizational weaknesses are a major cause of the failure to bring about change.

Table 8.1: Features of Administrative Development

Country	Locus of Change		Instruments of Change					Total
	Center	Periphery	Structure	Systems	Institution	Staff	Resources	
Ethiopia	2	2	2	2	2	2	2	14
Bangladesh	2	2	2	2	2	2	2	14
China	1	2	1	2	2	2	2	12
Lesotho	2	2	2	1	2	2	2	13
Tunisia	2	1	2	0	2	2	2	11
Thailand	2	2	2	1	2	2	1	12
YAR	2	2	2	2	2	2	2	14
Egypt	0	2	2	0	0	2	1	7
Malawi	2	0	1	2	2	1	1	9
Senegal	2	2	2	0	2	2	1	11
Haiti	2	2	2	2	2	2	1	13
Morocco	2	1	1	0	0	1	1	6
Indonesia	2	0	1	1	1	2	0	7
Pakistan	0	2	2	1	1	1	2	9
Guatemala	2	0	0	2	0	2	2	8
Paraguay	0	2	2	1	1	1	1	8
Nicaragua	2	2	1	0	1	1	1	8
Liberia	1	0	0	0	0	1	1	3
Malaysia	2	0	2	0	1	0	1	6
Mali	0	0	1	0	0	0	1	2
Benin	2	0	2	1	1	1	0	7

2 = High level of effort, 1 = Low level of effort, 0 = No effort.

Instruments of Change

The instruments of change -- structures, information systems, institutions, staff, and resources -- supported the implementation of change programs in a variety of ways as discussed below.

Structural change: Changes in organizational structure nearly always involved strengthening the organization at the school and district

level, and delegating certain tasks, especially those related to school supervision and support, to those structures.

The most common approach was the grouping of schools in clusters ("nucleos" in Latin America) to improve the pedagogical support and assistance to small rural schools. A few countries also attempted to strengthen local support -- or even control -- over the school.

In Ethiopia the Awraja Pedagogical Centers provide a permanent base at the provincial level for support, training and supervision of teachers as well as for the local development of teaching materials. Further decentralization through the establishment of district level pedagogical centers is envisaged. In addition, the involvement of the local community in the school has been strengthened considerably. Following the implementation of a mass literacy campaign in the mid-seventies, parents have become much more aware of the importance of education, and exercise considerable influence in the school through the urban dwellers or peasant associations.

In Paraguay schools in rural areas are grouped in a cluster around a central school which serves as a center for the supply of learning materials and a resource center for pedagogical support and training of the staff of the associated schools.

In addition to the strengthening of the administrative capacity at the local level, several countries attempted to improve their administrative capacity through changes at the top or by creating new organizational units.

Permanent structural change at the top of the hierarchy occurred in Tunisia, where a special Directorate for Rural Education was created. Entirely new organizational structures were created for programs in Lesotho, YAR, and Benin. But merely establishing new structures was not enough; success was related to the extent that such structures were properly funded and staffed. The poor performance of the programs in Benin, Liberia, and Paraguay, for

example, can be explained largely by the underfunding and the understaffing of the newly-created organizational units.

Communication systems: The importance of effective information and communication systems is amply illustrated in the cases. In all high outcome and in some of the moderate outcome programs, there was considerable testing of new curricula, monitoring of classroom experience, and feedback from teachers in the classroom to the program designers at the national curriculum center or pedagogical institute. This process typically led to changes in the program. In the high outcome programs, an effort was made to regularly collect implementation data, and teachers were regarded as an important source of information. In several instances, special institutions were established to create an official channel for the flow of information.

In Malawi, an evaluation unit was incorporated into the Malawi Correspondence College to improve communication and provide feedback from the classroom level to be used for program revision. And in Thailand, the secondary school diversification program uses an advisory committee to supervise and direct the adaptation of curricula and syllabi to local needs.

Communication systems also contributed to building a base of broad support for projects by disseminating information about the program to interested groups.

In Ethiopia and Nicaragua, this was accomplished through political channels. In Pakistan, the director of the Project Implementation Unit noted the absence of an effective public relations campaign as an important weakness in the design of that country's First Primary Education Project. The Second Primary Project includes support for such a campaign. In that project,

as well as in Bangladesh, teachers and first-line supervisors (learning coordinators) were trained in community relations in order to encourage parents to send their children to school, and school management committees were established. In Tunisia, local support for the change program was gained through the community-wide sale of agricultural and textile products made by the students.

A lack of interaction among the implementing agencies, professional institutions, and line agencies concerned with the project can have negative effects on project outcomes.

Mali is a case in point. The PIU, staffed by expatriates, did not establish an effective working relationship with Malian staff at the National Pedagogical Institute. The PIU also failed to communicate the objectives of the science and technology project to teaching staff and to solicit feedback from them. In addition, administrative personnel at the school level were not involved in the process. Without a national support base, the newly integrated science curriculum was discontinued after the expatriate experts left. Similarly, the radio and television project in Malaysia emphasized program production issues and neglected to inform and train teachers and Educational Resource Center staff about their roles in the program. Accordingly, motivation for implementing the reform was low and the program was applied in only a few schools.

Although high outcome programs often incorporated mechanisms for classroom feedback into the project design, there is no record of monitoring student achievement in a systematic manner. Moreover, data on student flows and internal efficiency (drop-out and repetition rates) are rare and unsystematic, and judgments on quality improvement are impressionistic and based on anecdotal evidence such as reports by teachers that "students now appear more active" (Haiti II PCR). Also, reliable data on the extent of classroom application of the innovation are rare, with the possible exception of the Haiti and Malaysia programs. Even for projects

that have been undergoing implementation for ten years or longer, there is no evidence of attempts to test systematically student achievement or the impact of the change program on student learning.

The absence of adequate mechanisms for monitoring and evaluation is striking, though not surprising. Middleton et al. (1988, forthcoming) similarly found, in reviewing 33 Bank-assisted education projects, that the Bank's record of success for monitoring and evaluation has been weak. In part, this is due to a neglect to provide for it in the program design; in part, it is a failure to implement monitoring and evaluation components included in the program.

The present study shows that, perhaps in lieu of formalized monitoring and evaluation mechanisms, high outcome programs relied on informal procedures characterized by frequent contact among program designers, teacher trainers, and teachers. This finding echoes what Huberman and Miles (1984) found in their study of school improvement: implementation success, and specifically institutionalization, are more likely when the evaluation procedures are informal and intuitive.

Among the sample cases, managers of successful programs made a considerable effort to stay close to the implementation process in the classrooms. These managers were not people dealing with abstract concepts from the central office. On the contrary, they regularly visited classrooms and solicited feedback from teachers and front-line managers. As a result, they monitored progress closely, although often in an ad hoc

manner. This allowed the program managers to have a good "feel" for the impact of the program, in spite of the absence of formal performance and outcome data, and set the stage for learning from the implementation experience and for adjustment of program objectives and strategies when and as needed.

The point is illustrated by several cases:

In Senegal, the staff of the National Coordinating Committee regularly visited centers, assisted center directors with their management tasks, and trained teachers on the job. As a result, they understood what teachers knew and what they didn't know, and could redesign the training program accordingly.

The two-tiered supervisory system in Bangladesh allowed for significant interaction between learning coordinators and classroom teachers. In addition, the management and support systems that are now being created will provide information and classroom experience with the program to the Directorate of Primary Education.

During the piloting of the textbook component for the Ethiopia basic education reform, teachers and administrators provided feedback to NCDC staff, a process that continued during teacher training in the Awraja Pedagogical Centers.

These findings reflect the value of informal evaluations: such evaluations provide feedback more quickly, maximize opportunities for learning and allow timely corrective action without putting implementors on the defensive. This is not to say that formal monitoring and evaluation procedures are not important. As Middleton et al. (1988) have shown, monitoring and evaluation are necessary to generate information useful in improving educational practice at the school level. The key is that these activities need to be focused on the school, or local, level rather than

the national level, to be formative in order to allow for program modifications, and to require close contact between program managers and the classrooms in which change is being implemented.

Institutional strengthening: All the high outcome cases paid considerable attention to the strengthening of particular institutions, confirming the key role of institutional strengthening in the administrative development process.

Support for policy and planning institutions, such as the National Curriculum Development Center in Ethiopia, the Academy for Fundamental Education in Bangladesh, and the National Pedagogical Institute in Haiti has been a critical element of successful educational change strategies. Although Bank assistance to supporting institutions nearly always included the PIU, in many cases it was aimed more broadly and included agencies with a national responsibility. A capacity to manage civil works programs was developed in Thailand by restructuring the PIU and creating a Central Procurement Unit in the MOE. A Maintenance Center was established in Senegal to produce and maintain low-cost science equipment. And in Lesotho, a unit to manage the procurement and distribution of textbooks to schools was created.

The cases demonstrate that institutional development is a continuous process that takes place over many years. As a crucial element in the educational change process, institutional development is critical to the institutionalization and sustainability of the program (see Chapter XII). The absence of strong national institutions to carry the reform helps explain low outcomes in cases such as Pakistan and Mali.

Staff: The staffing of the various institutions and agencies with competent national personnel plays an important role in the

implementation of high outcome programs. In the sample cases, the issue of staffing was generally addressed through the provision of training. There are no recorded attempts to affect staff selection policies. Teacher training is recognized in all programs as a crucial factor in successful implementation and is discussed in detail in the next chapter. High outcome programs also featured training for key administrative and professional staff and a limited use of expatriate experts. Although some high-level training took place abroad, it was usually delivered through national training courses. The high outcome programs can be distinguished by the comprehensiveness of their staff development plans; attention was paid to personnel at all levels of the system.

In Thailand, training was provided for teachers, administrators, principals, and department heads. And in Bangladesh, the training plan covered a wide range of staff, including administrative and supervisory staff, teacher trainers, research and evaluation staff, teachers, and assistant teachers. In China; although expatriate experts were brought in for short periods, Chinese nationals took full responsibility for implementing the reform.

YAR was the only high outcome program to rely heavily on expatriate assistance to operate the program. In that project, a severe shortage of national staff necessitated the recruitment of large numbers of expatriate technical assistants to provide the newly-developed institutions with experienced senior-level managers and even operating-level staff. Only in the later stages of program implementation did the training and development of national staff become a priority.

Resources: Adequate and consistent resource provision, both financial and human, also contributed to administrative development. An organization starved for operations funds which does not provide its staff

with adequate monetary and other incentives cannot be expected to perform effectively. Good administration requires adequate funding.

In Bangladesh, project funds were specifically budgeted for the salaries of the additional staff required to implement the change program. In Pakistan, although the First Primary Education Project financed the total salary costs associated with the creation of three categories of new personnel, the government gradually assumed this financial responsibility under subsequent projects. This mechanism ensured the sustainability of these posts upon completion of the project. And in Lesotho, staff of the Book Supply Unit were incorporated into the civil service during project implementation. In contrast, Nicaragua and Paraguay are examples of programs that did not endure due to a failure of the governments to budget sufficient national funds to replace external funding at the end of the project.

Change Strategies

In all four change strategies, considerable attention was given to administrative development at the school and district level. (See also Chapter VIII.) However, the mix of instruments supporting administrative development differed with the demands of each strategy.

Progressive innovation: Administrative development was an integral part of the programs that used a progressive innovation strategy. Although each of the countries that adapted this strategy already had an administrative infrastructure with an above-average implementation capacity, building up existing capabilities further was still considered a priority. Efforts were directed not only at national planning and program coordination, but also at local program delivery and implementation support. Ethiopia and Lesotho provide good illustrations of organizational

development efforts that took place at both the top and bottom of the educational system.

In Ethiopia, the central level institutions charged with program planning, curriculum development, materials development and school construction were gradually strengthened through the assistance of a series of Bank-supported projects. Activities occurring throughout the entire system were effectively linked together into a relatively well-coordinated change effort through improved management systems, communication between parents and teachers, and provision of feedback to managers and program designers. Finally, the training of professional and administrative staff at all levels was an important feature of the implementation process.

In Lesotho, progress toward increased national responsibility for textbook publishing and distribution was accompanied by the creation and gradual strengthening of the national institutions set up for this purpose, culminating in the establishment of the Book Supply Unit. At the same time, the program included provision for extensive training of local administrators and teachers.

Incremental expansion: Administrative development is equally important for programs that pursue an incremental expansion strategy. In this context, however, it takes place in a more gradual fashion that provides ample opportunity for staff development. Malawi and YAR are cases in which new organizational structures were set up to implement the program. As these organizations expanded, the original mandate evolved, new functions were added, and staff were trained to deal with the increasing and changing responsibilities.

In Malawi, as the Malawi Correspondence College (MCC) grew over a twenty-year period, its institutional foundation also evolved. The program has been strengthened during this period through the introduction of instructor training, creation of an evaluation unit, and the establishment of effective lateral coordination

with the Ministry of Education and the Malawi Broadcasting Corporation.

In YAR, the Basic Training Scheme began without the benefit of an institutional base, but established an increasingly strong administrative structure as time went by. As the line agencies operated with increasing effectiveness, supporting institutions also flourished; as district training centers were developed, village-level community councils and district-level councils were set up to monitor them.

Discrete change: In the context of a discrete change strategy, organizational development is comparatively straightforward, since the main task is to establish structures to implement the new program at the school level. This can affect the legal structure, budgetary procedures, or organization of the instructional process and the deployment of teachers and pupils.

In the case of the science and technology program in Senegal, considerable attention was given to the training of the center directors in scheduling and other matters related to administration of the centers. At the same time, the National Coordinating Committee developed into a permanent body responsible for the management of the program.

In Egypt, substantial technical assistance was provided, including in-service training and fellowships for school managers involved in implementing the technical school improvement program.

Permanent pilot: The permanent pilot programs either neglect or ineffectively support organizational strengthening at the top of the organization.

In Pakistan, while the staff development program supported by the project was massive, it focused rather narrowly on the lower levels of the hierarchy. Much of the effort in the initial

Table 13.1: Implementation Outcomes

	Application	Institution- alization	Ambitious- ness	TOTAL RATING
High				
Ethiopia	5	5	5	15
Bangladesh	4	5	5	14
Lesotho	5	5	2	12
Tunisia	4	5	4	13
Thailand	4	5	3	12
China	5	4	3	12
YAR	4	4	4	12
Moderate				
Malawi	4	5	3	12
Egypt	5	4	2	11
Senegal	4	4	3	11
Haiti	4	2	4	10
Morocco	3	3	3	9
Pakistan	3	2	4	9
Indonesia	3	2	3	8
Low				
Paraguay	2	1	4	7
Nicaragua	1	2	4	7
Guatemala	2	2	3	7
Liberia	1	1	4	6
Malaysia	1	2	3	6
Mali	1	1	3	5
Benin	1	1	4	6

Causes of Poor Implementation

The lowest outcome cases were poorly implemented and did not achieve significant progress toward their initial educational change objectives. Although nearly all managed to provide much of the physical infrastructure that was planned at the outset (albeit sometimes with

strong national institutions, change programs are likely to flounder, may not become institutionalized, remain dependent on external support and are not internally sustainable. The Pakistan experience discussed above illustrates these potential dangers clearly. On the other hand, without a strong organization at the base of the system capable of delivering and supporting a quality educational service, even the best national plans will never get implemented at the school level. The programs in Bangladesh and Thailand illustrate this two-pronged approach.

In Bangladesh, project implementation benefited at the base of the organizational structure from strengthened school support and supervision resulting from the creation of two additional levels of supervision, creating opportunities for more intensive support to the school. In addition, assistance to the Academy for Fundamental Education allowed that agency to become an effective coordinator and promoter of the program at the national level.

In Thailand, organizational development has focused on a national institution (Directorate of Secondary Education) as well as on the training of managers at the school and district level.

Innovation Management

The educational organization has, broadly speaking, two distinct functions. The first one is system maintenance and the other one is innovation management. These functions have different demands in terms of the type of people and the management structures and systems that are required to bring about optimal performance. Organizationally they are best separated; many private and public organizations have recognized this and have created special units in charge of the development of new products and services. An important aspect of the support for administrative

development in the most successful cases was the attention to building up a capacity for innovation management. This was done in two ways: first, by strengthening institutions responsible for policy and planning, including the design of programs of change and innovation; second, by developing a specific capacity for the implementation of investment programs aimed at educational change. The first, institutional strengthening, was discussed above.

The design of structures and systems needed to manage different types of educational investment programs under different conditions of environmental stability have been discussed by Verspoor (1986) and Middleton, Rondinelli, and Verspoor (1987). These papers emphasize the need to adapt the design of a project management organization to the specific requirements of the task and the environment. Further, the authors argue that since projects nearly always include a set of tasks involving different degrees of innovation -- such as civil works, book procurement and curriculum change -- it will often be necessary to assign the management responsibility for different tasks to different functional units. Under these conditions, the responsibility of the organizational unit in charge of managing the change program will often need to be one of performance monitoring and coordination, rather than of actual implementation.

This review supports the propositions regarding project management put forward in the papers mentioned above. The key contingency variables are the same as those that determined the change strategies

discussed in Chapter V. Further, since project management structures are task-based and change strategies are defined programmatically, it is quite common to find that different tasks within one change strategy are handled by different organizational units. The coordination of the work of these different units then becomes the critical project management challenge.

The high-outcome cases illustrate this approach to innovation management very clearly.

In Ethiopia, the responsibility for the management of the reform program and the supporting projects was divided among the National Curriculum Development Center, the Educational Materials Production and Distribution Agency, and the Ethiopian Building Construction Authority.

Similarly, responsibilities for managing the successful program in YAR were divided among several MOE agencies. The School Building Unit/PIU is responsible for the physical aspects of the project, while the educational aspects of the program are handled jointly by the Project Coordinator, the Director of Teacher Training, and the Director of Non-Formal Education. Within the Directorate of Non-Formal Education, duties are further delegated to the National Board for Non-Formal Education (which sets policy and budget requirements and administers the BTF) and the Nonformal Education Directorate (which designs the curricula used in the DTCs).

The case of Benin, on the other hand, illustrates the dangers of combining all management responsibility into one unit. The Director of Cooperative Action was responsible for program coordination, procurement, curriculum work, materials development and distribution. The combination of these responsibilities in one understaffed agency, isolated from specialized policy and planning institutions, led very rapidly to the neglect of the educational aspects of the program, especially in terms of curriculum and materials development and instructor training.

Summary

The preceding discussion of the case experiences demonstrates the critical role of administrative development for the successful

implementation of educational change. Interventions aiming at the strengthening of the administrative structure and systems are critical in the change strategies of the high outcome programs, but are conspicuously absent in the low outcome ones. Yet there was considerable variation in the specific design of administrative development interventions, depending on the type of change strategy adopted.

Several specific findings are worth highlighting. First, successful change projects strengthened the administrative capacity at both the center and the periphery of the system. Second, effective administrative development nearly always involved the improvement of school support and supervision systems. Third, though formal mechanisms for the monitoring and evaluation of program were weak in all cases, managers of high outcome programs kept themselves informed of the progress of implementation at the school level through a variety of informal mechanisms. Fourth, high outcome programs paid considerable attention to strengthening policy and planning institutions. Fifth, the development of a competent cadre of national staff was essential to successful implementation. Sixth, high outcome programs required adequate resources. Finally, successful administrative development included building a capacity for innovation management which involved both institutional strengthening and the development of an implementation capacity. Developing an implementation capacity required clear structural arrangements typically designed to coordinate and reinforce the efforts of different functional agencies.

IX. TEACHER TRAINING

Successful educational change is built on effective teacher training. A well-designed and effectively implemented in-service teacher training program was found to be a key element in the successful implementation and institutionalization of change programs, irrespective of the change strategy adopted by the program, as indicated by the support for teacher education in all but one of the high and moderate outcome cases. (See Table 3.3) Furthermore, among the less successful programs, attention paid to teacher training in project implementation varied considerably. Although the design and implementation of teacher training components does not by itself ensure success, it is an essential feature of high-outcome programs.

Another illustration of the importance of in-service teacher training for successful educational change is the fact that in the case studies, 21% of project cost was allocated for teacher training. This is more than double the proportion of Bank lending for teacher training in all education projects (9%), as estimated by Haddad (1985). Haddad found that considerably less than half of this 9% (between 3% and 4%) supported in-service training. The amount allocated for this purpose in change programs is thus many times greater than the amount that has been spent on in-service training in the average project.

Key Features

Examining the 21 cases and contrasting high and low outcome programs provides some valuable insights into the implementation of teacher training components. Four elements stand out as key features of successful teacher training components. These include the need to: provide permanent and locally available in-service teacher training; establish effective systems for supervision and support; adjust the content of training to teachers' level of knowledge and experience; and, encourage teacher motivation and commitment. Each of these elements is discussed below.

Provide permanent and locally-available in-service teacher training. One critical variable in achieving educational change is a mechanism to provide teachers with ongoing in-service training at a convenient location. Whether carried out in the school itself, or at a local learning resource center within easy reach of area teachers, training provided to teachers as they go through the process of implementing reform programs has played an important role in the success achieved in a number of countries. Strengthening of the administrative presence at the local (district) level was often an essential element in making in-service training locally available.

In Ethiopia, the nationwide effort to introduce a new primary curriculum depended heavily on a series of seminars and workshops and four- to six-week residential in-service programs at 11 teacher training institutes. These activities were followed up with training at the Awraja Pedagogical Centers where teachers had the opportunity to become familiar with new instructional materials and techniques. Teachers were encouraged to be

creative and innovative, and their feedback (based on classroom experience) was incorporated into the revision of materials. Courses for training primary-school administrators were also conducted at the Awraja centers. The availability of continuous training provided through these centers proved to be crucial to successful implementation of the curriculum reform.

Similarly in Bangladesh, reforms to strengthen primary education benefited greatly from the central role played by recurrent in-service teacher training. Each teacher and assistant teacher received approximately two months of intensive training on general topics. Then, every other month teachers received three days of training on common teaching problems. Training content concentrated on subjects important to increased learning achievement, such as practical methods of teaching each major subject, ways to adapt the curriculum to the social and physical environment of the pupil, understanding the ways children develop and learn, elementary methods of evaluating teaching and learning, management of classrooms (especially multi-grade classrooms), and effective methods of parent-teacher and community relations. Preliminary indications were sufficiently promising that the training has been made a permanent feature of the primary education system, and a coordinating committee was formed to extend the project training model nationwide.

In Egypt, ongoing training was also made available at the school level. Consultants, including resident and short-term specialist experts, were responsible for providing valuable in-service training to technical teaching staff in the context of introducing a new curriculum and upgrading technical education for secondary students. Although overseas fellowships had been envisioned at the outset of the project, they were ultimately replaced by this effective in-service training component carried out at the school level.

And in Senegal, the Bank-supported project to establish science and technology centers for lower secondary school students relied on an extensive training program for teachers, center directors, and directors of feeder schools. This included initial training plus annual refresher courses. In this case, ongoing teacher training was provided at the centers themselves through visits by members of the national project coordinating team. While this project in Senegal was implemented with a fair degree of success, implementation of the nearly identical project in Mali failed, in part due to the lack of ongoing in-service training that left teachers unprepared to implement the new curriculum and make effective use of the new instructional equipment.

Finally, training can be brought effectively to the school level through the "echo" (or "cascade") training method. Such systems rely on initial training of a small core of personnel, who in turn train a larger group, who then train a still larger group, and so on. This technique has been widely used in Asia, where it has made it possible to train a large numbers of teachers in a short time.

In the project to diversify the secondary education curriculum in Thailand, the National Curriculum Development Center staff were able to train all teachers, administrators and community leaders through four levels of progressively expanding intermediaries. In order to avoid dilution of the original message as the training moved further from its point of origin, detailed training manuals were prepared and distributed to all training participants.

However, in Pakistan, a cascade system broke down after only one round of training, when trainers left to return to their original teaching jobs. The failure to create a permanent system to train teachers was a major obstacle in the institutionalization of that country's primary school improvement programs.

Establish effective systems for supervision and support. The availability of school-level supervision and support was found to be a second critical element in successful project implementation. The strengthening of local administrative structures (discussed in the previous chapter) is a key step in this respect. As the following examples illustrate, supervision can be strengthened by creating an additional layer of supervisory staff, by establishing a nuclear system (clustering of schools), or through regular school visits by central office staff. The extent to which teachers receive regular and frequent visits from inspectors, supervisors, or other program staff who provide pedagogical

support and supervision (rather than administrative support), the greater the likelihood for successful implementation of the reform.

Experience with project implementation in Bangladesh supports this conclusion. The strategy to strengthen primary education in rural areas depended on recruitment of 250 Assistant Upazilla Education Officers (AUEOs) to provide direct supervision to teachers and headmasters. The quality of the AUEOs was particularly high, since they had been selected from a field of 5,000 applicants who had already met minimal qualifications. The new supervision system relied on regular visits to the schools by AUEOs, as well as classroom visits by head teachers. This approach worked well and improved teacher attendance in project areas, which is expected to improve student performance over time.

Despite the break-down of cascade training in Pakistan noted above, the change program in that country was aided by strengthened supervision. This was accomplished through creation of new posts of learning coordinator (LC) and supervisor, which were located below the district level. LCs were responsible for providing pedagogical support to primary school teachers, as well as conducting recurrent in-service training. Supervisors supported these efforts and provided training for LCs. As a result of improved supervision, community support for primary education grew, thereby encouraging student attendance and improving student performance. An evaluation of the two provinces that had the most generous supervision arrangements indicates that giving LCs a fairly small case load of schools, which they can visit often and get to know well, may be an important prerequisite to the success of this type of intervention.

In Paraguay, improved supervision was achieved within a nuclearisation program that aimed to increase the accessibility and efficiency of primary school. Under this nuclear system, well-equipped community learning centers were surrounded by a cluster of 10-15 associated schools in a limited geographic area. Center directors were expected to supervise all schools in the nucleus, replacing the conventional supervisor's role, and were given motorbikes to enable them to visit otherwise inaccessible schools. In the context of a Bank-supported project, this system contributed to the improvement of school supervision and administration in rural areas. A survey of directors and teachers found that a key to successful implementation is to free the directors from teaching responsibility and allow them to focus exclusively on supervision. Unfortunately, failure to attend to this issue, as well as failure to provide sufficient

recurrent financing to support the maintenance of the motorbikes, led to erosion of the initial success.

The distance education program in Malawi also benefited from increased supervision. The Malawi Correspondence College has been strengthened by regular visits to MCC centers by headquarters staff who provide instructor training and supervision. In Haiti, where school supervision was isolated (temporarily) through the use of mobile supervisors, higher test scores were found in schools in which teachers were properly supervised.

Adjust the content of training to the teachers' level of knowledge and experience. The third key variable associated with "high outcome" projects pertains to the appropriateness of training for the teachers who receive it. It is critical to pay careful attention in the design of training programs to the level of teachers' knowledge of relevant subject areas and teaching experience. When training courses fail to take teachers' level of knowledge into account, implementation of the reform will be hampered. This problem can be avoided in two ways: through visits by trainers to classrooms in order to observe teacher performance, and through initial testing of teachers to determine areas of strength and weakness.

In Senegal, staff of the project coordinating unit relied on classroom observation of teachers to design effective in-service training programs. They found that much of the equipment to be used in the new science and technology centers was too advanced for many of the center teachers. Project staff thus introduced the equipment to the teachers only very gradually over a three-year period, as teachers gained the necessary knowledge and experience needed to use the equipment effectively. Attention to the teachers' ability to benefit from training and make use of the technology, and the subsequent restructuring of the teacher training program based on classroom experience, produced the foundation for successful implementation of the new science and technology curriculum.

Again, comparison with Mali underlines the point. In that country, project management's failure to adjust training to teachers' ability to use the sophisticated equipment led to underutilization of equipment in the completed science and technology centers, and thus to unsuccessful implementation of the reform.

In the secondary school diversification project in Thailand, teacher training took into account the level of knowledge and experience of project teachers. Different training programs were designed to address three groups of teachers: (a) those with no professional qualifications but with experience in teaching; (b) experienced and qualified teachers with no training in practical arts; and, (c) experienced and qualified teachers who need to be introduced to the concept of greater community participation.

Experience in two countries demonstrates how implementation can suffer when training is not geared to teachers' level of education and ability.

In Pakistan, for example, research has shown that only 25% of the project teachers had an adequate grasp of the math and science curriculum. The training component's failure to address teachers' need for training in basic subject matter hampered project implementation. And in Haiti, although teacher training has been useful, an evaluation of the reform found that teachers did poorly on a linguistic ability test. The evaluators suggested that in the future, teacher training in that country go beyond pedagogical training to include a strong dose of linguistic skills.

Encourage teacher motivation and commitment. Although many projects included a range of incentives to attract and retain teachers, it is not clear that most of these incentives were effective. The provision of housing for teachers in rural areas and the promise of salary increases, for example, had little effect on the employment of female teachers in Pakistan and Haiti, respectively.

Teachers did respond positively, however, to projects that supported their professional development and allowed them to be active participants in, rather than mere recipients of, the reform. The case studies show no evidence of "endemic conservatism" (Hurst, 1983) or rejection of innovation on the part of teachers. On the contrary, when teachers believe that a change program can improve the quality of education, they welcome the opportunity to do a better job and to contribute to the reform in a meaningful way.

In Senegal, where teachers had the opportunity to work along with central project staff, they developed an "esprit de corps" and a sense of commitment to implementing the new science and technology curriculum. Similarly, the reform in Ethiopia was strengthened by support from teachers, whose input and ongoing feedback were considered key to project implementation. Providing Ethiopian teachers with the freedom to adapt the national program to local conditions and stimulating their creativity also had a positive effect on local level commitment.

In addition, provision of pedagogical support, training, and instructional materials and equipment are critical to sustaining teacher morale and commitment. Where these inputs are lacking, commitment to the program rapidly disappears, as demonstrated in Liberia and Malaysia.

In Liberia, efforts to train teachers to teach practical subjects and adult literacy failed, in large part due to the absence of ongoing support and the failure to promote and explain the project to the teachers expected to implement it. The situation in Malaysia was similar. In that country a project to introduce educational radio and television in rural areas failed to provide sufficient training, support and instructional resources. As a result, teachers had neither the means nor the incentive to try to implement the reform.

Summary

The case experience reported in this chapter demonstrates that the teacher is central to the change process and that a well-designed and well-implemented teacher training program is crucial. It strongly supports Fullan's (1982) observation:

Educational change depends on what teachers do and think -- it's as simple and complex as that. It would all be so easy if we could legislate changes in thinking (Sarason, 1971, p. 193).

The cases bring out some important lessons. First, effective teacher training programs provided on-going and conveniently located in-service training. Second, effective training required the establishment of effective local supervision and support systems. Third, many training programs experienced implementation problems because the subject matter and professional knowledge of the teachers in the target group were not adequately assessed before the program was launched. Fourth, the commitment of the teachers to the change program was strongly influenced by improved working conditions and the opportunities for professional development and provision of adequate instructional materials and equipment. In several instances, the failure of the teacher training program was due to the lack of the financial and human resources required for successful implementation.

X. BUILDING AND MAINTAINING COMMITMENT

Government commitment has been repeatedly and consistently identified as one of the critical conditions for successful project implementation. The 1984 Review of Project Performance Audit Results, issued by the Bank's Operations Evaluation Department, emphasized, on the basis of a study of 50 successful projects:

...the overriding importance to project success of borrower commitment to project objectives, and of borrower involvement with project design, preparation and implementation. (The World Bank, 1984)

Commitment variables (stability of support - Table 12.3; broad national commitment - Table 12.5) were found to be consistently associated with high outcomes and absent in low outcome cases (Table 13.2). Yet a detailed analysis of the sample cases demonstrates that the issue is more complicated than it first appears. First, government commitment is not necessarily constant; it can fluctuate over time. Second, the relationship between commitment and high outcomes is not direct: some programs that are clearly designed and pushed by external agencies become highly successful, while others to which the government is seriously committed end up as failures. Third, the commitment of various stakeholders can vary considerably, acting as a counter-weight to official commitment. Fourth, since programs often combine a number of different components and types of investment categories, government commitment to each may vary. A cross-sectoral review of country commitment to Bank-supported development projects produced similar findings (Heaver and Israel, 1986).

To understand the role of "commitment" in the implementation of the educational development programs included in this review, it is useful to look at it from the perspective of the three main groups involved in program implementation: (i) local implementors, such as teachers and district administrators, (ii) external agencies - in these cases, nearly always the Bank, and, (iii) high-level government authorities.

Local Implementors

In the early phases of program implementation, the commitment of either or both of the last two groups was nearly always strong, while the commitment of the first group was frequently weak. The cases do not include any examples of significant involvement of local implementors in the definition of program objectives or the design of the implementation strategy. In most cases teachers and local administrators seemed to adopt a "wait and see" attitude. Merely issuing centrally-initiated laws or decrees did not suffice to break through this barrier. Special efforts to develop the commitment of local implementors were often required during the implementation phase.

The case of Ethiopia illustrates how the combination of political/administrative pressure and effective training and professional support led to successful educational change. In Senegal, commitment from science center directors increased significantly after they were given the opportunity to observe how similar centers were operated in Belgium. In Nicaragua, on the other hand, local implementors were not brought into the process: as a result, even strong top-level commitment was not sufficient to successfully implement the educational objectives of the program.

One common element in the cases regarding the development of commitment and motivation among local program implementors is the importance of providing opportunities for professional development. Teachers welcome the opportunity to do a better job. They welcome assistance and support, as illustrated in the Pakistan, Bangladesh, and Senegal cases. In addition, provision of pedagogical support, training, and instructional materials and equipment are critical to sustaining teacher morale and commitment. When these inputs are lacking, commitment to the program rapidly disappears, as demonstrated in Liberia and Malaysia. Further, giving teachers the freedom to adapt the national program to local conditions, and stimulating their creativity in this respect has a positive effect on local level commitment.

In Ethiopia, the reform was strengthened by the input and ongoing feedback of teachers was taken into account by the program managers, who in turn provided assistance and freedom to teachers to adapt curricula to local conditions.

In addition to building commitment among teachers and local administrators, it is often important to build a broad base of support among the parents and the community at large.

In Tunisia, the reform received important support from parents, who joined school associations and participated in decision making related to their children's future. Such action affected the political commitment to the program and insulated it to some extent from political turbulence.

To develop local level commitment, the program has to meet real needs of parents and teachers. Parents have to see the innovation as a good thing for their children. Teachers have to see the innovation as workable in the classroom, not too demanding in terms of extra effort, and beneficial to the students. Ultimately the success of the change program is determined at the school level. The evidence from the cases clearly indicates that if a change is not workable in the school or if the educational benefits are not forthcoming, then the change program is unlikely to survive.

External Agencies

For the programs with externally-driven initiation processes, the consistency of external support -- most often provided by donor agencies -- is critical. Many change programs experienced considerable implementation difficulty in the early stages, since the institutions were often still weak and inexperienced, the program was unfamiliar to many, and a multitude of actions had to be initiated. External support was, in many instances, critical to help overcome these early implementation problems.

When the YAR program ran into difficulty, the Bank continued to support the program out of the belief that the problems had to do with implementation, not the program concept. And in Haiti, consistent Bank support over more than a decade played a key role in the survival of the reform in basic education, despite serious political controversies.

In Senegal, delays in civil works and equipment procurement slowed down project implementation by about three years, which caused the implementation to become quickly obsolete. Only after the arrival of an external Chief Technical Adviser, five years after appraisal, did implementation of the education elements

begin to get off the ground. The consistent and flexible support of the Bank and the willingness to extend the closing date of the project for several years were important factors in the eventual success of the program.

In these cases, external influence helped overcome weaknesses of internal commitment problems, caused by internal opposition or informal "decommitment."

In Benin, on the other hand, Bank staff had doubts about the project concept as well as concerns about the implementation. Weak Bank commitment to the program in that country resulted in the Bank's refusal to consider a follow-up project and in further decreases in program effectiveness.

High-Level Government Authorities

Formally, governments confirm their commitment to the program by signing a loan agreement. Informally, however, there may be considerable misgivings regarding certain elements of a project. These elements invariably run into implementation problems.

In Nicaragua, the basic education component was given low priority by the pre-revolutionary government in that country. Implementation accelerated only after the new revolutionary government came in and made it a high priority.

In other cases, the program was opposed by internal pressure groups.

In Haiti, the powerful urban elite opposed introducing the national language Creole as the language of instruction in the first four grades of primary education.

Commitment can also fluctuate over time.

In Senegal, initial government commitment to the science and technology program diminished as implementation delays accumulated and other pressing issues claimed the attention of senior government officials. However, when the program finally became operational, the authorities liked what they saw and consistently provided recurrent funds in spite of a severe financial crisis.

In several high outcome cases, the commitment of government leaders to a particular change program translated itself in policies which combined pressure on teachers to implement the program and assistance to do it. It was made perfectly clear to teachers and administrators that the reform was there to stay, that it was a central policy priority, and that non-participation was not acceptable. At the same time, ample implementation assistance and support was made available to teachers to allow them to actually apply the program. Huberman and Miles (1984) found a similar situation in the US in a high outcome scenario which they called the "enforced, supported mastery" where superintendents or other administrators made it clear to teachers that non-compliance would not be acceptable, while providing ample implementation assistance.

Summary

Review of the cases suggests that three factors were closely associated with building and maintaining commitment. First, an important element in sustaining commitment was the broadening of support of the program to include local implementors and parents. Opportunities for

professional development helped establish commitment to innovative programs among teachers. Communication of program objectives and achievements to parents in several instances helped broaden the base of support for the project in the community. Second, consistent external agency support was often critical in building government commitment to educational change programs. External support often compensated for low internal commitment and helped overcome internal opposition. Third, demonstrated success was the surest way to build and maintain commitment. Politicians and senior level officials tended to have a strong commitment to successful and popular programs; there were no successful projects to which the government was not committed. Success bred commitment. Incremental strategies, as pursued by all the high and moderate outcome cases, offer special opportunities to consciously build and maintain commitment. They make it possible to avoid large errors and nurture small successes.

XI. LATE IMPLEMENTATION: DEGREE OF USE

Assessment Criteria

Improvements in the teaching and learning processes targeted in educational change programs will bring about the desired changes in learning, labor market performance, or study results at the next level of education only if the programs are actually applied in the classroom. A variety of carefully documented North American case studies have identified non-implementation at the classroom level as a leading cause of innovation failure (Berman, 1981).

Few programs in the sample systematically collected information on the degree of use of the change program in the classroom, and in no case was the degree and the effectiveness of the application documented on the basis of systematic observation of classroom processes. Thus, to assess program application in the absence of "hard" data, three kinds of data were used. These include the extent to which project inputs were actually delivered to the schools and the other institutions involved in the program, implementation coverage, and impressionistic comments on the application of the innovation by classroom visitors.

Ratings on the success of input delivery are based on a combination of two factors. High ratings are associated with those projects in which both hardware and software components were delivered as required. Hardware components include physical inputs such as the

construction of science workshops or schools, and the delivery of instructional materials and equipment. Software components comprise the training of teachers and other project participants, the provision of supervision and support, and the development of curricula and related instructional materials.

Thus, Ethiopia's high rating reflects that program's effective management of the procurement and distribution of physical inputs as well as the successful development of new curricula and materials, delivery of teacher training and retraining, and provision of ongoing local support at district-level training centers. Conversely, the low rating ascribed to Malaysia's radio and television reform program reflects problems experienced in the repair of radio equipment, the cost and difficulty of obtaining spare parts, and the shortage of trained technical staff.

Coverage refers to the extent to which a change program has realized its objectives with respect to the number of schools applying the innovation.

In Thailand, 50% coverage in the implementation of a nationwide, twenty-year project is considered to be "on track" at this time. In Mali, however, only six of 11 anticipated science centers were operational by project completion, and even those were not being used as intended due to a lack of teachers trained to use the equipment and of lack of service staff to maintain it. Similarly in Nicaragua, coverage was limited by the gradual watering down of the project through reductions in the number of participating primary schools and cutbacks in support for teacher and administrator training.

Assessment of application reflects the degree to which the new curricula, new teaching methods or new materials, for example, are being used in the classroom.

In YAR, the non-formal education program resulted in the implementation of a large number of high quality training programs. District Training Centers monitored by village-level community councils designed and implemented these programs in response to local needs. On the other hand, a similar program in Benin demonstrated little, if any, application of the training programs designed by experts at the central level.

Rankings

Table 11.1 ranks the 21 case study programs on the basis of the three variables discussed above. Each is rated between 1 (low) and 5 (high) on each variable. Notwithstanding the data limitations referred to above, the ratings provide some useful indications for comparative purposes.

The application ratings reflect to a significant extent the judgments of the Project Completion Reports (PCRs), the Bank supervision reports, and the assessments of project staff who were interviewed for this purpose. Where there are discrepancies between PCR assessments and the rankings presented in Table 11.1, these reflect the fact that PCRs tend to give considerable weight to the satisfactory completion of hardware elements whereas this study attempts to assess the achievements relating to quality improvement and implementation at the school level. However, in order to assess a program's success more fully, it is necessary to determine whether it has become a permanent feature of educational and administrative practice. This notion of "ultimate success" is discussed in the following chapter on institutionalization.

The degree of use was classified as high, moderate, or low. Although cut-off points are arbitrary, and differences between the low end of the "high" category and the high end of the "moderate" category, for example, are marginal, important outcome differences do emerge, nonetheless. The programs with high outcomes have effective mechanisms for input delivery, and have achieved or are making good progress toward their geographical coverage objectives. Impressionistic evidence often confirms that student learning is being positively affected by the reform program. At the other extreme are the lowest outcomes programs that have either been discontinued (with physical facilities representing the only remaining evidence of the program) or have become moribund, neglected by the authorities and struggling for supplies, support and funding. Little evidence of application of the program by the teachers is reported. In between these two extremes is a set of programs in which the level of use is moderate. In this group, programs suffer from problems with respect to at least one of the three outcome variables.

Table 11.1: Degree of Use

	Input Delivery	Coverage	Appli- cation	Total Outcomes
<u>High</u>				
China	5	5	5	15
Ethiopia	5	4	5	14
Lesotho	5	4	5	14
Egypt	4	5	5	14
Bangladesh	5	3	5	13
Tunisia	4	4	5	13
YAR	4	4	5	13
<u>Moderate</u>				
Thailand	3	4	5	12
Haiti	4	3	4	11
Malawi	4	3	4	11
Senegal	4	3	4	11
Morocco	3	4	3	10
Indonesia	4	3	3	10
Pakistan	2	3	3	8
<u>Low</u>				
Paraguay	2	3	2	7
Guatemala	2	2	2	6
Liberia	2	1	1	4
Nicaragua	2	1	1	4
Malaysia	1	1	2	4
Mali	2	1	1	4
Benin	2	1	1	4

Summary

In the five lowest-ranked cases, positive outcomes were found to be essentially limited to the construction of physical facilities. Broad coverage of the educational programs and high levels of use were reported for a group of programs that was diverse in terms of objectives,

implementation strategies, and conditions of educational and economic development.

Possibly the most intriguing finding is the high ranking of the ambitious change programs in two of the poorest countries of the world, i.e., Ethiopia and Bangladesh, in achieving high levels of use. These countries set ambitious goals, but selected effective implementation strategies which allowed them to break down the program in manageable components that were implemented sequentially and resulted in high degrees of use. Conversely, the achievements of programs with modest ambitions will be modest at best. Little ventured, little gained.

XII. INSTITUTIONALIZATION

An educational change program becomes institutionalized when it disappears as an innovation and becomes part of the standard educational practice. Or, as Miles et al. (1987) put it: "Institutionalization is the process of building-in changes in a lasting way so that they continue as stable routine aspects of a school's life." The goal of change programs is to produce significant outcomes in terms of student achievement; if such gains are to be sustained, the changes that lead to these high outcomes must become integrated into regular classroom practice and their application must become routine. In this sense, institutionalization is the ultimate goal of the change process.

Characteristics

Several criteria have been proposed in the literature (Berman and McLaughlin, 1978; Miles and Huberman, 1984) to judge the degree of institutionalization of educational change programs. Generally a program is considered to be institutionalized when: (a) soft money (external grants) has been replaced with hard money (local resources); (b) the program has gone through the regular budgetary cycle; (c) the program has survived changes of key staff; and, (d) an effective organizational framework has been established, generally on the basis of enactment of legal and administrative measures to create an institutional foundation for the program. Using these criteria, the 21 case studies were ranked from 1

(low) to 5 (high) to reflect the degree of institutionalization that they achieved. These rankings are presented in Table 12.1.

Table 12.1: Degree of Institutionalization

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Liberia	Haiti	Morocco	Egypt	Ethiopia
Paraguay	Pakistan	Indonesia	Senegal	Bangladesh
Mali	Malaysia		China	Lesotho
Benin	Nicaragua		YAR	Tunisia
	Guatemala			Malawi
				Thailand

Process

To explore the institutionalization process, the six institutionalized programs (rated 5) were compared with the four least institutionalized ones (rated 1), with respect to a range of variables commonly thought to be associated with the institutionalization of educational change. Specific indicators were estimated for the following variables: (a) the degree of development of a country's educational system (system indicators), (b) the importance of the reform to the central government (centrality), (c) the nature of the change program, and, (d) the critical elements of effective implementation strategies. Similar variables were identified by Miles et al. (1987) in a review of the institutionalization of education programs in OECD countries. The programs were rated high, moderate, or low on these variables.

System indicators include three elements: teacher quality, management capacity, and the effective involvement of national institutions (Verspoor, 1987). These elements revealed varying degrees of association with successful institutionalization as indicated in Table 12.2.

The level of teacher quality was not predictive of success: teacher quality (judged on reported levels of professional training and certification) ranged from moderate to low among all ten countries, regardless of their degree of institutionalization. While the quality of teachers was low in two successfully institutionalized programs (Bangladesh and Malawi), it was judged to be moderately good in two countries where programs were not institutionalized (Paraguay and Mali).

Table 12.2: System Indicators

	Teacher Capacity	Management Capacity	Involvement of National Institutions
<u>Institutionalized</u>			
Ethiopia	m	h	h
Bangladesh	l	h	m
Lesotho	m	m	m
Tunisia	m	h	h
Malawi	l	m	m
Thailand	m	m	m
<u>Not institutionalized</u>			
Liberia	l	l	l
Paraguay	m	l	l
Mali	m	l	l
Benin	l	l	l

Management capacity, i.e., the ability of line agencies to carry out agreed programs of action, was more closely linked to institutionalisation. Whereas the successful programs ranked either high or moderate on this variable, all four unsuccessful programs were characterized by low management capacity.

The effective involvement of national institutions, e.g., planning units or centers for curriculum development, in the design and implementation of the change program was also found to be strongly linked to institutionalization. The programs that achieved high institutionalisation rankings had either highly or moderately effective policy and planning institutions. Programs that were not institutionalized ranked low on this variable.

The experiences of Mali and Paraguay are noteworthy. Although competent institutions had been supporting policy development and implementation in the education sector in these two countries, project designers did not recognize these professional competencies. Consequently these institutions were not, or were only marginally, involved in the reform program, which adversely affected the institutionalization process.

Centrality (Berman and McLaughlin, 1978) was also assessed using three indicators: the program's importance in the country's national development strategy, the degree to which the program was initiated internally, and the stability of government commitment to the program. The data suggest that centrality is necessary for institutionalization. As indicated in Table 12.3, the institutionalized programs received high or

moderate ratings on all three centrality indicators; the least institutionalized programs rated low on at least one of the indicators.

Table 12.3: Centrality

	Importance for National Development Strategy	Internal Initiation	Stability of Internal Support
<u>Institutionalized</u>			
Ethiopia	h	h	h
Bangladesh	h	m	h
Lesotho	m	h	h
Tunisia	m	h	h
Malawi	h	h	h
Thailand	h	h	h
<u>Not institutionalized</u>			
Liberia	l	m	l
Paraguay	m	h	l
Mali	m	l	l
Benin	l	l	l

The nature of the program was determined by four indicators: implementation requirements (i.e., the degree of difficulty and the variety of implementation tasks); predictability (i.e., the degree to which effective implementation can be predicted); resource requirements (i.e., resources required to operate and maintain the program); and, planning perspective (i.e., the length of time anticipated for full program implementation). As illustrated by Table 12.4, there seemed to be little correlation between these elements and institutionalization.

Table 12.4: Nature of the Program

	Implementation Requirements	Predictability	Resource Requirements	Planning Perspective
<u>Institutionalized</u>				
Ethiopia	h	m	h	h
Bangladesh	h	l	h	m
Lesotho	m	h	m	l
Tunisia	m	l	h	m
Malawi	l	h	l	h
Thailand	m	l	h	h
<u>Not institutionalized</u>				
Liberia	m	l	m	m
Paraguay	h	m	m	m
Mali	m	l	h	m
Benin	m	l	m	l

Institutionalization was achieved in spite of difficult implementation requirements (as in Ethiopia and Bangladesh), a low degree of predictability (Bangladesh), high resource requirements (Ethiopia, Bangladesh, Tunisia, and Thailand), and a long planning perspective (Ethiopia, Malawi, and Thailand).

Implementation elements -- administrative development, training, commitment -- were very strongly linked with institutionalization. The six programs that achieved the highest degree of institutionalization effectively incorporated these elements into their implementation strategies whereas the least institutionalized programs lacked them.

Table 12.5 demonstrates the strong positive association between these implementation factors and the outcome of the institutionalization process. It strongly suggests -- not surprisingly -- that effective implementation is an essential prerequisite of institutionalization.

Table 12.5: Implementation Elements

	<u>Administrative Development</u>				<u>Training</u>		<u>Commitment</u>
	Special- ized Program Managers	Clos- ness to Imple- mentation	Streng- thening of Line Agencies	Decen- trali- zation	Super- vision and Support	In-ser- vices Teacher Training	Broad- Based National Commitment
<u>Institutionalized</u>							
Ethiopia	h	h	h	h	h	h	h
Bangladesh	■	h	h	h	h	h	h
Lesotho	h	h	h	■	h	h	h
Tunisia	h	h	h	h	h	■	h
Malawi	h	■	h	■	h	h	■
Thailand	h	■	h	■	h	h	h
<u>Not Institutionalized</u>							
Liberia	■						
Paraguay			h		h	h	
Mali							
Benin							

As illustrated by the case studies, it is not so much the absence or presence of each variable that accounts for institutionalization, but rather the way they are linked and reinforce each other.

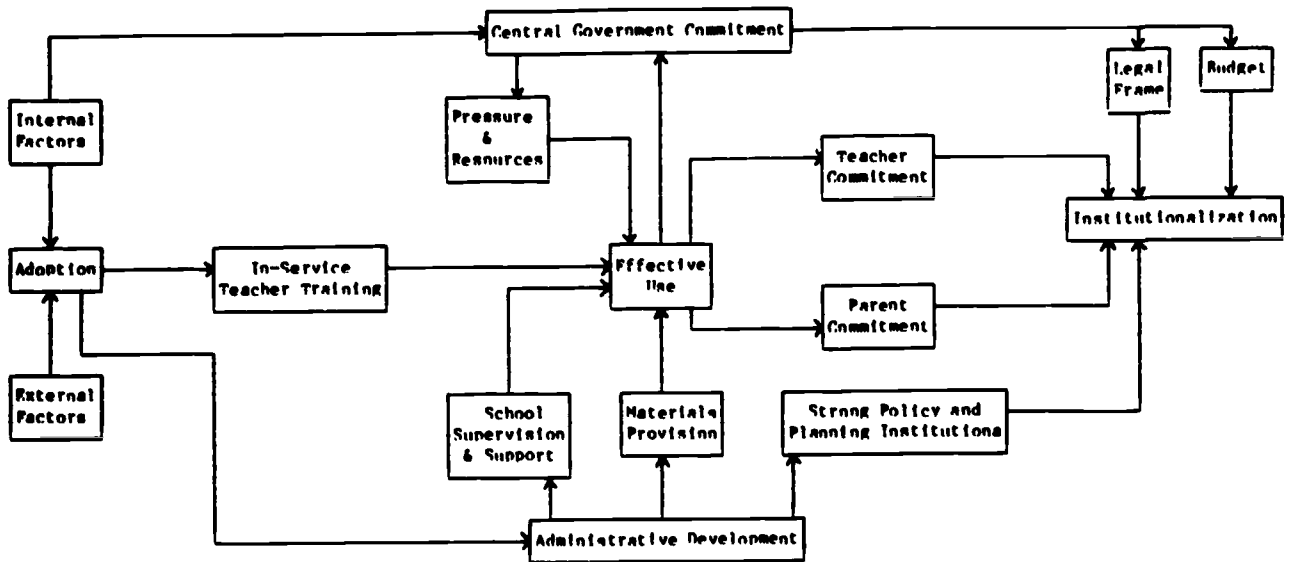
In Paraguay, a moderately demanding program to improve primary education which enjoyed considerable government support initially and was effectively implemented in the context of two Bank-supported projects, rapidly lost momentum when project financing

ran out. Improvements that had been realized at the school level could not be sustained in a system with limited management capacity, weak planning and policy institutions, an eroding resource base, when government attention and interest was shifting to other externally financed education programs.

The linkages between the variables are depicted in Figure 12.1 which schematically represents and summarizes the change process observed in the cases. The central variable in the model is effective use, which results from good implementation through the provision of materials and teacher training, supervision, and pedagogical support, as well as central leadership visible in administrative pressure and budgetary resources. Effective use will result in commitment of parents, teachers and central government authorities. The school level success of the change, backed by a legal framework, funding from the national budget, and competent policy and planning institutions, sets the stage for the eventual institutionalization of the change program.

The figure illustrates that an effective implementation strategy pays explicit attention to institutionalization throughout implementation. A particularly good example is the Lesotho textbook program, in which institutionalization objectives were included in the original program design; staff training programs, financial systems, and legal actions geared to promote institutionalization were integral in the implementation plan.

Figure 12.1: Institutionalization Process



Managing the institutionalization process of an educational change program is a complex task involving the reconciliation of the often conflicting demands of effectiveness and sustainability. Tensions are particularly apparent regarding (i) the choice between special program management (project implementation units) or integration in regular management structures; (ii) the need for experimentation, visibility of outcomes and the desirability of rapid expansion; and (iii) the need for school improvement and the capacity to manage change.

Summary

This chapter provides some explanations for whether or not programs become institutionalized. First, management capacity and the involvement of national institutions increase the chances of

institutionalization, while teacher quality does not. Second, centrality appears to be necessary, but not sufficient, for achieving institutionalization. Third, no particular relationship was discovered between the nature of reform programs and institutionalization. Fourth, a strong link was found between the elements of effective implementation strategies and successfully institutionalized programs. This suggests that implementation success is a prerequisite of institutionalization. And yet, it is not enough that attention be paid to improving the policy and institutional environment and building a capacity and resource base to sustain the change. Congruence in purpose and simultaneous action on several fronts is needed, lest improvements be only temporary.

Attention to institutionalization is important throughout the change process. In fact, in many instances, an institutionalization strategy -- focusing on the development of educational and budgetary regulations during the implementation phase -- will need to be part of the project design.

XIII. IMPLEMENTATION AND OUTCOMES

Program Ranking

Few programs made deliberate attempts to assess their effects on student achievement. Haiti and Lesotho are the notable exceptions; all other cases relied on impressionistic and anecdotal information to determine the impact of the change. As a result, it has not been possible to evaluate program outcomes in terms of improved student learning.

It was possible nonetheless to assess the quality of the implementation process in each of the sample cases by assessing the degree to which the change was used in the classroom and the extent to which it was ultimately institutionalized. An index was constructed that combined these two variables with a third variable, the "ambitiousness" of the program. This last variable is a composite of the contingency variables (i.e., degree of innovation and environmental conditions) discussed in Chapter VI and was included to reflect the differences in the degree of implementation difficulty among programs. It thus differentiates between a highly ambitious program and a less ambitious one.

The Ethiopia and Thailand programs are highly ambitious in that they incorporate major innovations in curriculum and teaching methods in the context of nationwide application. On the other hand, projects that

embody more limited deviations from existing practice (e.g., Lesotho) or more limited geographic implementation (e.g., Egypt) are ranked as less ambitious. In addition, this variable takes into account a country's level of educational development. Thus, while a given change might be considered highly ambitious in a country with a poorly developed educational system, the same change might be considered only moderately ambitious in a country with a strong institutional base and some experience in managing educational change projects.

Table 13.1 presents an assessment of the implementation outcomes of the 21 change programs reviewed in this study. The table combines the overall program application ratings presented in Table 11.1, the institutionalization ratings in Table 12.1, and an assessment of the ambitiousness of the program. The rankings that emerge represent not only the degree of success in achieving program outcomes at the classroom level (application), but also the sustainability (institutionalization) of the program, and the degree of difficulty required to achieve these outcomes. As discussed in the previous chapter, the table shows that application and institutionalization are closely related. Successfully implemented programs tend to become institutionalized, while those that do not succeed at the classroom level do not survive.

experimental program was directed at creating and improving local organizational arrangements for the supervision and support of schools, but little effort was made to improve national or provincial capacities for policy formulation and program design. Lacking a base in the central planning and policy institutions, the program consequently has had difficulty in escaping its status as a permanent pilot.

In Haiti, problems resulted from the failure to include MOE in project implementation. That country's primary education reform program was largely carried out by a national agency, the National Pedagogical Institute and the PIU, both of which were organizationally outside the Ministry of Education.

The nature of the change strategy thus has a crucial impact on the design of the organizational intervention, as is depicted in Figure 8.1.

Figure 8.1: Change Strategies and Administrative Development

		<u>Degree of Innovation</u>	
		low	high
<u>Environmental Uncertainty</u>	low	<u>Progressive Innovation</u> simultaneous strengthening of PPS* institutions and local administrative structures	<u>Incremental Expansion</u> sequential process with considerable initial emphasis on development of PPS* institutions and on gradual development of local administrative capacity
	high	<u>Discrete Change</u> emphasis on strengthening of school-level administration	<u>Permanent Pilot</u> neglect of developing central institutions adversely affects generalization

* PPS - policy, planning and support

Successful administrative development focuses on strengthening the national policy and planning institutions as well as improving the administrative capability at the base of the educational system. Without

significant delays), these programs fell far short of their educational goals.

In general, programs can fail to reach and sustain their educational objectives for two reasons. The first concerns problems of technical validity, i.e., whether the change will in fact produce the expected improvement in student learning. The second relates to deficiencies in the implementation strategy, which results in non-application of the change in the classroom. These interaction of these two variables determine program outcomes as depicted in Figure 13.1.

Figure 13.1: Determinants of Program Outcomes

		<u>Quality of Implementation</u>	
		good	poor
<u>Technical Validity</u>	high	<u>high outcomes</u>	<u>low outcomes</u> Malaysia Mali Nicaragua Paraguay
	low	<u>low outcomes</u> Guatemala	<u>low outcomes</u> Liberia Benin

Adapted from Fullan (1982)

Three points should be noted. First, the technical validity of a program idea is not an absolute concept: it is always relative to a specific country context. For example, diversified secondary education by

all accounts has turned out to be a technically valid program in Thailand. Yet in Guatemala, the program is moribund. Not only was Thailand better able to afford a comparatively high cost per student for the program, but a deliberate attempt was made to reduce the cost while retaining the educational core. Second, success does not come automatically; three out of four possible combinations lead to failure. Success needs to be worked at and planned for. Third, the most common situation was the poor implementation of what was probably a reasonable idea.

In these low outcome programs the critical variables associated with implementation success were absent. First, there was usually an incongruity between the program's implementation strategy and its degree of innovation and external environment. For example, in Malaysia the objectives of immediate province-wide application was inconsistent with the ambitious nature of the envisaged television program. Second, as shown in Table 13.2, the low outcome programs neglected to pay adequate attention to the specific implementation factors identified in the three preceding chapters: administrative development, inservice training, and commitment building.

**Table 13.2: Implementation Elements of
Low Outcome Cases**

	Administrative Development	In-Service Training	Commitment
Guatemala	0	X	0
Paraguay	X	0	0
Nicaragua	X	0	0
Liberia	0	0	0
Malaysia	0	0	X
Mali	0	0	0
Benin	0	0	0

X = implemented; 0 = not implemented

On the whole, the broad objectives of these programs are not substantially different from the objectives of the high outcome programs (although in a few cases -- e.g., Liberia and Guatemala, -- there are doubts about the validity of the original project aim, and in a few others, the program design was complex). In fact, the high outcome Senegal case and the low outcome Mali cases are very similar in terms of objectives, design and country context. A similar high/low outcome parallel can be found in the YAR and Benin cases. Thus failure is not associated with a particular set of program objectives, but rather with the poor implementation of these objectives.

Furthermore, effective implementation of programs with a low validity rating is rare (although Guatemala is a borderline case). This suggests a process of natural selection and survival of the fittest among innovations: programs pursuing changes that do not work and do not positively affect student learning get weeded out rather rapidly, are seldom fully implemented, and are never institutionalized.

The list of explanations of poor implementation is certainly not exhaustive. While those listed are the most important, other factors played a direct or an indirect role in the failure of these programs to reach their educational objectives. Some of these include failure to make follow-up investments, the existence of other programs that compete for commitment and financial support, and an overly complex change program design. This supports the observation that there are many ways to fail, and relatively few to succeed (Berman, 1981).

Permanent Pilots

Although the programs classified as permanent pilots are not failures, they are not great successes either, and often fall far short of their appraisal expectations. The discrepancy between environmental uncertainty and a high degree of innovation results in a range of problems. First, in some cases the recurrent cost requirements of the program were considerable. Given scarce resources, this often meant experimenting further with lower-cost solutions. Second, some pilot programs did not build up the national administrative and policy institutions needed to command the commitment and support required for incremental expansion. Third, pilots often remained inconclusive in many respects; further tests and pilots were required to develop a replicable and affordable program model that could serve as the basis for generalization.

Summary

The preceding analysis shows that it is possible to achieve significant and sustained educational change under many different conditions. Two conclusions are particularly important. First, successful programs were found to have high levels of use and had put in place policies and institutions to sustain progress. Second, while technical validity of the change program is important, it is by no means sufficient for achieving high outcomes; in nearly all instances low outcomes resulted from poor implementation of what was essentially a good idea.

The analysis of the causes of low program implementation substantiates the findings of the previous chapters by showing that the implementation variables identified as critical for success were typically neglected. Nonetheless it is rarely the absence of one single factor that leads to failure, there is usually a combination of design, implementation and environmental factors that reinforce each other.

While much of the evidence for these ratings remains soft and anecdotal due to the absence of data on student achievement, the circumstantial evidence - especially in the highest rated cases is quite convincing. Nevertheless, a major effort should be made to systematically monitor student achievement as one of the critical measures of successful program implementation.

XIV. THE CHALLENGES OF LARGE-SCALE CHANGE

This chapter considers the special problems associated with the implementation of large-scale educational development programs. This issue is of considerable importance in developing countries, since most educational systems in the developing world are centrally managed and strive for nation-wide improvement and change. The chapter reviews first the characteristics of large-scale change programs and the dilemmas involved in the design of implementation strategies for these programs. This is followed by a brief discussion of possible strategies for the management and dissemination of such programs.

Features

Education policy makers in developing countries often favor, and have sought Bank support to implement, programs of large-scale change, or "reform". These programs typically have broadly defined objectives often linked with objectives of national social and economic development. They are usually complex, comprising a "bundle of innovations" (van den Berg and Vandenberghe, 1984) to be implemented more or less simultaneously, and often aim at nation-wide application and comprehensive changes in teaching and learning at one or more levels of the education system. Innovations designed and implemented solely at the school and district level, which feature prominently in the North American literature, are not very common in developing countries. National development objectives, the goal of nation-building, and the legacy of centralized colonial traditions militate

against the decentralized approach to educational change that is so common in North America.

The programs analyzed in this book illustrate this quite clearly. Of the 21 programs, 19 had, at least at the time of adoption, large-scale (national or provincial) coverage objectives. More than 60% had comprehensive change objectives. Furthermore, support for large-scale change has become an important feature of Bank lending operations, which are increasingly designed to support reform of national educational policies and sectoral or sub-sectoral investment programs.

Large-scale programs tend to emphasize adoption and neglect implementation. Sack and Warinhrasek (1979) reviewed a large number of educational development plans of developing countries and reported an almost universal neglect of discussion of implementation strategies. Further, Porter (1980) comments in a review of the role of the federal government on educational change in the United States and in Australia:

...the people concerned with creating policy and enacting the relevant legislation seldom look down the track to the implementation stage (p. 75).

Dilemmas

Planners and policy makers have often assumed that a clear and detailed explanation of the objectives and elements of the change program will lead to adoption by teachers and result more or less automatically in classroom implementation. The effects of failing to attend to

implementation issues have been exacerbated by the "loose coupling" (Weick, 1976) of the educational organization. "Loose coupling" refers to the considerable freedom teachers generally have with respect to the organization of the instruction in their classrooms, as well as to the autonomy of headmasters and principals. Further, many schools in developing countries are physically isolated and are rarely visited by administrators or supervisors. This makes it difficult for policymakers to impose the application of new programs by administrative decision.

Effective implementation of large-scale change programs requires achieving a balance between the national change objectives that are emphasized by policymakers and planners at the central level, and implementation of large-scale programs imposed by implementation constraints at the school level. Van den Berg and Vandenberghe (1986) have identified four dilemmas posed by the implementation of large-scale change. They are summarized in Figure 14.1.

Figure 14.1: Dilemmas of Large-Scale Programs

Features of large-scale change programs	Constraints of school level implementation
COMPLEXITY	
i) complex programs comprising a bundle of innovations with multiple and open-ended objectives	limited capacity to absorb change, calling for simple and well-defined programs
COMMITMENT	
ii) responsive to issues perceived as priorities by central policymakers and planners	priority issues at the school level may be different, local commitment to national programs often limited
CONFORMITY	
iii) program design sets out intervention strategies that are to be applied generally	specific conditions of each school (district) may limit applicability of nationally defined intervention strategies
CONSTRAINED RESOURCES	
iv) emphasis on program adoption, limited resources for external assistance to the schools	need for costly long-term school-level support and locally available training

The successful programs in the sample found ways to effectively address these four dilemmas.

Complexity: The initial design of many of the large-scale programs often combined several innovations in one complex program. Primary education development programs, such as those in Ethiopia, Bangladesh, and Pakistan, often simultaneously pursued quality improvement and expansion objectives. In other cases such as Haiti, Guatemala, and

Liberia, a non-formal program was piggy-backed on the primary program. In Mali the introduction of shared science teaching facilities was combined with the introduction of an integrated science curriculum. In YAR and Benin wholly new sub-systems of education were established.

The complexity dilemma was handled in several different ways. First, in several projects the implementation strategy was designed to match the size of the change to the absorptive capacity at the school level through a progressive innovation strategy (Ethiopia). Another method was to scale down the scope of the program and abandon de facto the objective of national coverage and implement the change in only a few institutions (discrete change).

In Senegal and Guatemala, plans for program expansion were officially postponed and de facto abandoned when questions of cost and effectiveness could not be resolved. The Thailand strategy of incremental expansion had a similar effect by drawing out the implementation period to nearly three decades.

Since the number of schools affected by the change remained quite limited at any given point in time, adequate attention to support and training could be provided more easily. Finally, where there was no conscious strategy to deal with complexity, a process of natural selection weeded out some of the most demanding innovations early on. Often the non-formal education components were victims, as in Haiti and Liberia.

Commitment: The second dilemma is that the problems that preoccupy central policymakers are not the same as those of implementors at

the local level. The result can be a lack of local-level commitment to the project and subsequent non-implementation. Effective communication of program objectives and responsiveness to the problems faced by teachers and local administrators are vitally important ingredients of successful programs.

The program in YAR, designed to respond to locally identified training needs, resulted in effective mobilization of demand and considerable grassroots support - and high outcomes. Similarly, close contact with implementors at the local level allowed the programs in Ethiopia, Senegal, and Lesotho to identify the needs of teachers and local administrators and to respond effectively to them.

On the other hand, in Benin (a low outcome case), the program design was based on a needs assessment carried out by external consultants and the development of model programs by central staff. Likewise the community schools program in Liberia and the radio/television program in Malaysia did not seem to respond to locally felt needs. In the absence of special efforts to mobilize the demand for these programs, there was no local support base to overcome the consequences of a deteriorating economic environment or technical implementation problems.

Conformity: Large-scale programs typically operate on the basis of guidelines and procedures that are intended to be applied generally, and are not designed to respond to the demands of unique situations. Yet, variation rather than uniformity characterizes education systems. Rural/urban differences, variability in levels of economic development among regions, and ethnic, linguistic and cultural differences mean that schools operate in very different environments. In addition, teaching is an activity that does not lend itself easily to regulation of work processes or standardization of outputs. The successful change programs

made a deliberate effort to allow for local adaptation within the framework of the nationally defined change objectives.

The Ethiopia case illustrates how commitment and administrative pressure for the implementation of the nationally formulated reform program can be combined effectively with a considerable amount of freedom for local administrators to use the reform materials creatively and adapt them to specific local conditions. Similarly, in Thailand, there was a continuing process of adaptation of reform objectives and implementation strategies to different local conditions.

Constrained Resources: Programs that emphasize implementation support to schools often require considerable human and financial resources, which tend to be in short supply in the developing world. As a result, more efforts have been focused on the adoption of large-scale programs than on their often costly implementation.

In the case of Malaysia, the program set out to implement a new primary and secondary school curriculum with strong support from radio and television. The program design focused heavily on the development and broadcasting of radio and television lessons, but neglected developing an organizational structure at the school level or providing the necessary training for classroom teachers. As a result, teachers in only a few schools turned on the radio or television and participated in the program.

A similar phenomenon was observed in the Guatemala nuclearization program. Although all the necessary laws were passed, they were implemented only to a very limited extent because neither funding nor special training were available to support implementation at the local level.

Conversely in high outcome cases such as Bangladesh and Ethiopia, considerable resources were spent on the staffing and funding of decentralized administration. While less visible than school buildings, these investment decisions paid off handsomely in terms of better quality of implementation.

Unfortunately, budgetary constraints often make it difficult to fund adequately the nation-wide support system necessary for effective implementation. As a result, the generalization of the program is slowed down or the change is diluted to the extent that the program as implemented bears only a vague resemblance to the original design. In a number of low outcome cases the only tangible change was the newly constructed buildings.

Management Models

In recent years several models have been proposed which may help manage these dilemmas inherent in large-scale change. They suggest a systematic learning approach to the implementation of large-scale change programs, a decentralization of decision making authority to lower levels of the education hierarchy, especially the school level, and a deliberate use of a variety of dissemination strategies.

Korten (1980) has suggested a three-step approach for the implementation of rural development programs, which could be used to address the problems of large-scale change in education. This approach deliberately phases program implementation in such a way that lessons from early implementation are incorporated in the program design before moving to larger scale application. The first phase of Korten's model, learning to be effective, tests on a small-scale whether the program produces the anticipated outcomes. The second phase, learning to be efficient, tests various approaches to reduce the cost per unit of output; it is at this stage that different methods of training, support, and supervision are

piloted. The third phase, learning to generalize, builds up experience to resolve the problems that arise in large-scale implementation. These phases are not always linear and they overlap to some extent, but this pattern of learning and adaptation can be clearly identified in the high outcome large-scale cases (e.g., Thailand and Bangladesh). The model is an attempt to deal systematically with the complexity dilemma and is most easily applicable to the design of incremental expansion strategies discussed in detail in chapter VI. It is also valuable in designing progressive implementation strategies; for example, in Ethiopia several of the innovations were experimented and piloted before nationwide implementation. A deliberate strategy for learning from experience is likely to increase the applicability of progressive innovation strategies and help in balancing the often conflicting demands of educational change programs.

Miles et al. (1987) describes a model developed by Seashore-Louis and van Velzen (1986) which proposes a set of strategies to manage the dilemmas inherent in large-scale educational change programs discussed above. The key dimensions of these strategies are the degree to which they prescribe procedures and outcomes. These two dimensions combine into four strategies as shown in Figure 14.2.

Figure 14.2: Management Approaches

		<u>Outcome Specification</u>	
		high	low
<u>Procedure Specification</u>	high	blueprint model	diversified model
	low	goal accountability model	self-improvement model

Adapted from Seashore-Louis and van Velzen (1986)

- (a) The blueprint model specifies both procedures and outcomes, and aims at high uniformity among schools. It is managerially demanding, calls for extensive controls and regulations, and allows limited scope for innovation and change.
- (b) The diversified model emphasizes centrally stimulated change and highly regulated procedures, but allows for variation in school level outcomes (i.e., student performance).
- (c) The goal-accountability model is the equivalent of divisionalization in the management of large-scale business. Agreement is reached on performance goals and the school (district) chooses its own procedures to meet the goals.
- (d) The self-improvement model allows each school to internally develop its procedures and outcome goals. This model which typically requires highly qualified and motivated professional staff had considerable popularity during the 1970s in North America (organizational development) and Europe (school-based review).

Although nearly all the sample cases relied on considerable specification of procedures, they generally did not specify outputs in measurable terms. Thus, they most closely fit the diversified model of management.

Despite its common application in the developing world, this model has significant flaws. First, it is based on the assumption that procedures that lead to improved performance can be specified centrally. In the education sector, this is often not the case (beyond the most basic elements of teaching) and what demonstrably works in one place cannot easily be transferred to another. Therefore, specification of procedures can only be tentative and progress (which consequently depends upon learning from experience) must be incremental. Second, by not specifying measurable outcomes and targets, this model cannot hold schools responsible for results and makes policy makers reluctant to decentralize.

Moving toward the goal accountability model would allow schools to test and adapt a variety of procedures and treatments while imposing goals which they would be responsible to meet. In one case (Ethiopia), there was an attempt to introduce elements of the goal accountability model. There, teachers were encouraged to experiment and be creative in developing approaches to reach performance goals and the school was held accountable to the community (as represented by the Peasants or Urban Dwellers Associations). Although this model has not been used frequently in the education sector, it would seem to have considerable potential.

Introducing change in large organizations usually boils down to changing the way the smallest unit operates. In large organizations with thousands of dispersed service delivery points this process can rarely be managed from the center -- as is illustrated in the cases by the importance of efforts to strengthen the administrative structure and support systems

at the local level. Decentralizing the responsibility for change in the context of a goal accountability strategy is likely to eliminate some of the contradictions especially those related to the conformity dilemma, from which large-scale educational change programs often suffer.

Finally, large-scale change requires that issues of dissemination and of the relationship between central authorities and school and district level implementors be explicitly addressed. Two alternatives can be considered: direct or indirect strategies. Direct strategies use power or administrative action to bring about the desired goal. These methods are often heavy-handed and provide schools with no choice (officially) but to participate in the change project. Indirect strategies rely on incentives that persuade people of the value of the change program to promote its spread. Direct and indirect approaches are often combined in one implementation strategy with, for example, creation of experimental schools and mobilization of public opinion in the early stages, followed later by legal action and mandatory application. The most successful cases in the sample combined direct and indirect approaches, pressure and support. Application of direct strategies alone were the exception and when tried, they failed (e.g., Nicaragua).

Summary

Large-scale coverage objectives of educational change programs are prevalent in developing countries. Yet the dilemmas encountered in large-scale programs represent significant challenges for their management

and dissemination. First, large-scale change must resolve the dilemma arising from the program's complexity and the school's limited capacity to absorb change. Second, such programs must recognize and address the perceived differences between national and local priorities. Third, large-scale change must allow for local adaptation and variability. Fourth, implementation needs to be adequately funded.

The most effective approach to managing large-scale change might be a combination of a systematic learning approach to incremental expansion and "goal accountability" at the school level. Implementing large-scale change requires a phased approach progressing from small-scale experimentation to large-scale application and emphasizes learning from experience. The goal accountability model holds schools accountable for achieving uniform (national) goals while allowing, and even encouraging, flexibility in the schools' methods for attaining them. Implementation also requires a mix of direct and indirect strategies to address issues of dissemination and the relationship between central authorities and local implementors.

The most successful cases adopted a "think big and start small" strategy (e.g., Ethiopia and Thailand). In these cases, a firm national commitment to change goals was combined with an acceptance of substantial diversity at the school level, an insistence on school accountability, and an effective mix of dissemination strategies.

XV. IMPLICATIONS FOR PROJECT DESIGN AND IMPLEMENTATION

Traditions in Project Design

The policies and practices for the design, appraisal and implementation of World Bank projects (Baum and Tolbert, 1985), including education projects, are generally based on the requirements of infrastructure projects. The infrastructure model served the education sector well during the period when the provision of physical facilities and equipment was a dominant lending objective. It emphasizes the detailed identification and costing of project inputs and the careful planning for their timely delivery over a four-to-six year period (Verspoor 1985). This traditional model is based on three main assumptions. First, it considers the technology of the innovation -- the selection of program objectives and inputs -- to be the dominant variable affecting outcomes. Consequently, project development focuses heavily on the technical design of the innovation. Second, organizations are seen as rational and goal-oriented institutions, pursuing policies that aim at maximizing economic returns. Third, it is assumed that program design can be standardized and transferred across large numbers of beneficiary groups, while yielding essentially the same outcomes.

The sample of cases discussed in this review shows educational change as a complex and frequently hard-to-predict process, which does not comfortably fit the assumptions of this infrastructure model. The technology of many change programs is tentative and outcomes are often not

known with any degree of certainty. The reactions of teachers and students are difficult to predict and based on a rationale different from that of the program designers. Furthermore, program success is closely linked to the context in which the program is implemented. What works in one place may not be appropriate in another, and transformation and adaptation of the original program design is the rule rather than the exception. As a result, the distinction between planning and implementation is frequently blurred. Clearly, many of the "infrastructure-inspired" practices that have been applied in educational project design are, in fact, inappropriate for educational change programs.

The analysis in the preceding chapters suggests that this traditional approach to project design and implementation needs to be modified, and that there are five basic considerations that should be taken into account in the design of educational change programs and related investments:

- (i) implementation, the phase of the change process that most critically affects project success, should be given top priority;
- (ii) effective administrative infrastructures are a precondition for the implementation of any significant change program;
- (iii) project designs need to make provisions for incremental and flexible implementation strategies;
- (iv) arrangements for systematic learning from experience are essential to the change program design; and
- (v) attention needs to be paid to the eventual institutionalization of the change program at an early state of implementation.

These design considerations are discussed in more detail below.

Critical Importance of Implementation

No matter how promising an innovation looks on paper, no matter how well it has worked in other settings, it is only when the program is applied in a school that its outcomes can be determined and the program evaluated. Many programs falter at the implementation stage and do not produce the anticipated outcomes. The case analysis brings out the importance of the implementation phase. High outcome programs made implementation of the change program at the classroom level the primary concern and created conditions that facilitated application of the change in schools. While in some cases, implementation failed because the original plan was not feasible, more frequently the use of the change program by teachers was hindered by inadequate administrative support and poorly designed or inadequate teacher training.

Frequently implementation strategies have been designed to overcome initial resistance to change that is often political and apparent prior to adoption -- hence, the emphasis in many Bank-supported education projects on adoption and initial implementation. This is clearly too narrow. Gross et al. (1971) called attention to the need for continuing support and training to help overcome the later implementation problems. Miles and Huberman (1984) also distinguish between late and early implementation and conclude:

...diverse, self-sustaining, intense assistance, especially late in the implementation process, may be essential for full scale stabilized use of innovations. Also, such assistance seems to reflect above all,

the presence of administrative commitment, as well as the existence of innovation requirements that demand something of the users. (p. 106)

The high outcome cases analyzed in this paper show a similar pattern. Assistance to schools and training of teachers was provided systematically on a permanent basis. One reason that the strengthening of local administrative structures was found to be critically linked with high outcomes was that it created conditions for an effective delivery of training and support to schools. Increased attention to the planning and supervision of implementation processes at the school level by project managers and their staff, as well as by staff of international agencies, will enhance the likelihood of successful implementation and high outcomes.

A final point is the importance of a well-functioning logistical system. In their analysis of the implementation of educational innovations in developing countries, Havelock and Huberman (1978) found weaknesses in resources (equipment, trained personnel, facilities, and operating funds) as well as in procedures (coordination, and communication) as major reasons for implementation difficulties. The existence of a strong logistical system is of course linked with the implementation of a successful program of early institutional development. Ethiopia is a case where the early strengthening of the agencies in charge of curriculum development, materials distribution, and school construction made a significant contribution to the ultimate success of the primary school development program. Conversely, in Liberia the failure to deliver essential supplies to schools effectively precluded the implementation of key program elements.

Administrative Development

Educational change is thus a process that takes place in classrooms and schools, and that can only to a limited extent be affected by direct actions from the center of the organization. Chapter VIII emphasized the need to strengthen administrative capacity at the school and district level, as well as the need to bolster the professional competence of key policy and planning institutions, improve monitoring and evaluation systems, and separate innovation management administratively from routine organizational maintenance tasks.

Weaknesses in educational administration have reached critical proportions in many developing countries. Auerhan et al. (1986) reviewed Bank experience with institutional development in Africa and reported an increasingly serious underfunding of administrative services. The overview of Bank lending in Chapter III shows the relative neglect of administrative and organization issues in the design of educational change programs. At the same time, the high outcome cases reviewed in this paper demonstrate how crucial an effective organizational structure is to the successful implementation of educational change programs. The Bank so far has not been very effective in its support of administrative strengthening in the sector (Noor, 1985). To support administrative development more effectively, two points need attention: (i) organizational and institutional issues should be routinely analyzed in education sector reports and discussed with governments; and (ii) specialists in educational

management and administration should participate actively in the project development process.

In many countries, especially those at an early state of educational development, the establishment of a minimum degree of order, discipline and administrative capacity is the condition sine qua non for any attempt at quality improvement (Verspoor and Leno, 1986). Efforts will need to be focused first at the school level and at the district or subdistrict supervisory structures. In parallel, it will frequently be necessary to strengthen core central institutions that provide the necessary professional expertise and are responsible for systemwide policy, planning an administrative/logistical support (Chapter VIII).

This has four immediate implications for project design. First, especially during the early phases of the educational change programs, the development of an organizational and administrative infrastructure will need to be emphasized. Support for expansion and/or generalization of the program can then be made contingent upon successful implementation of the institutional development program. Second, it means that the choice of the implementation strategy needs to take account of the degree of administrative development that has been realized. For example, a country with limited managerial resources should be very reluctant to embark on an administratively demanding strategy such as progressive innovation. Third, it means that the share of project funds to be allocated to support administrative and institutional development programs would be more than has been usual in past projects. In numerous instances, administrative and

institutional development components have been included without the proper funding arrangements. Fourth, development of national managerial and administrative staff will need to be increasingly emphasized. Too often, projects continue to rely on expatriate staff for the management and operation of key policy, planning and support institutions. While this may expedite short-term project implementation, often there is a price to be paid in the long-term capacity to manage change. Trade-offs between short-term ambitions and long-term institutionalization need to be carefully assessed.

Institutional development is typically a long process, demanding a combination of changes in the organizational structure and management systems as well as staff training. It is -- like educational change -- a complex process that has rarely received the special attention it deserves during project development and project supervision. Nevertheless, the process is crucial, and resources allocated to it are likely to be well spent.

Incrementality and Flexibility

The considerable uncertainty caused by the difficulty in predicting project outcomes and in assessing the effectiveness of implementation strategies requires considerable flexibility in the implementation. A well-designed and carefully prepared implementation plan is important, but (perhaps paradoxically) planners should acknowledge that it is unlikely to be implemented as planned (Kanter, 1983). Low outcomes

are caused not only by a failure to carry out the original program design, but also by a failure to effectively address unforeseen problems.

Consequently, implementation plans should include mechanisms that allow for adjustments to be made during implementation.

Such arrangements should include, first and foremost, provision for the monitoring of project implementation. Implementation flexibility without information is meaningless. Policymakers and program managers cannot make decisions about adjustments in the program, project objectives, and implementation strategy without reliable information about the efficiency of input delivery, the degree of program application, and early program outcomes. So far, project monitoring efforts have tended to be erratic and impressionistic, rather than systematic. Reliable information on outcomes is usually not available given the absence of measures of achievement. Consequently, discussions of program success usually remain very subjective. Formal mechanisms for the adjustment of change programs through mid-term or even more frequent implementation reviews have, in recent years, been included in many loan agreements. To conduct such reviews successfully, adequate information is essential.

The implementation strategies of successful, large-scale educational change programs are typically incremental, either in terms of the degree of change (progressive innovation) or with respect to geographical coverage (incremental expansion). Furthermore, the cases show that implementation of significant change on a large scale takes a long time. It is important that project designs take into account the strongly

incremental nature of the change process as well as the time horizon usually associated with educational change. The limitations of what can be achieved in the traditional five- or six-year implementation period should be clearly recognized.

Projects should be designed as part of an overall longer-term program implementation strategy. This means that the Bank should be willing to accept that, in many cases, support for a particular project is only meaningful in the context of a willingness to support the program over a long period of time through a series of projects. This has been, de facto, the approach followed -- with considerable success -- in Ethiopia, Thailand, Bangladesh, and Haiti, for example. Deciding at the outset on such a purposely planned developmental approach, and specifying the outcome expectations for the project and the conditions under which continued support would be envisioned (always contingent, of course, on the availability of funds) would no doubt enhance the effectiveness of the process.

Flexibility in implementation of change programs requires that increased attention be given to supervision, much of it in the form of technical assistance by specialist staff. At present, Bank staff spend, on average, a total of approximately 200 staff weeks per project, of which about 75% is spent in the preparation and appraisal phase and only 25% is spent during the subsequent six-year implementation phase. These figures indicate the extent to which Bank staff effort is concentrated in the early phases of the project on implementation blueprints, reflecting the

infrastructure project perspective referred to above. This strong emphasis on project design and planning at the expense of implementation is not in line with the needs of educational change projects. Several courses of action could be contemplated to address this issue:

- (i) reducing the effort now given to project preparation, with the understanding that certain issues can only be resolved during implementation, and reallocating saved staff time to supervision tasks;
- (ii) increasing the responsibility of national staff for project supervision and allocating increased project resources to management and administration tasks, including project monitoring;
- (iii) refocusing the supervision effort of Bank staff on programmatic and policy issues; and
- (iv) providing for "implementation audits" performed by independent experts who would assess the degree of implementation achievement, and advise on ways to address problems.

Flexibility to respond to the high uncertainty associated with program outcomes or implementation strategies typically calls for experimentation prior to the commitment of large amounts of loan or credit funds. This can be done in the form of a pre-investment project or an experimental component in a larger project. Support for well-designed and well-implemented experimental and study components can pave the way for larger follow-up investments. During preparation and supervision, experimental components will need much more attention than would be justified by the proportion of loan funds allocated to them. Yet, the experience to date indicates that such components are relatively neglected, especially during supervision. As a result, many have remained unimplemented.

Learning from Experience

A considerable body of experience with the implementation of change has been built up over the past two decades of investment in education in the developing world. This experience has, however, not been systematically analyzed and is often not given sufficient attention in the design of new educational change programs. As a result, the same problems arise time and again. To improve the outcome record of educational change in the developing world, systematic learning from experience is critical. In this regard, internal learning processes need to be encouraged, and mechanisms for the exchange of experience between countries should be developed. Implementation can effectively be seen as a learning process (Verspoor, 1986).

Internal learning refers to the review of a country's past experience with educational change. An analysis of past successes and failures can bring to the fore issues that will need to be addressed in the strategy for the proposed project. In a country where teachers have experience with successful change, it will often be possible to use existing channels of program delivery and communication and build on a positive attitude toward change. In many instances, however, it will be found that teachers have been disappointed so often by proposed change programs that the initial challenge is to break through this often well-justified skepticism. Assessing the national capacity to implement change on the basis of past experience and system variables (such as the level of qualification and experience of the teaching force and the administrative

capacity of the system) should become a standard feature of sector analyses.

In many instances, projects follow up on earlier investments supporting the same program. Often, such projects reflect only minimally the experience that has been acquired. For example, the Second Teacher Training Project in Indonesia did not adequately incorporate the lessons learned in the First Project, and is now encountering severe implementation problems, partly as a result of this failure to learn from experience. Successful projects, on the other hand, include careful analysis of the lessons from preceding investments and make adjustments when necessary. To allow project designers to build upon the experience of previous projects, adequate information based on systematic monitoring and evaluation of implementation progress and outcomes is essential.

Second, there is little evidence of the sharing of experiences in implementing educational change across national borders or even within countries. UNESCO has set up networks for the exchange of educational innovation experiences, but the data are nearly exclusively based on reports of designers and implementors rather than independent assessments, and offer only limited guidance for educators in other countries. There is no mechanism for validation of the effectiveness of these innovations, along the lines of the National Diffusion Network in the United States. As a result, countries are struggling to resolve often-similar educational problems without the benefit of other countries' experiences. Standardization of criteria for reporting and publication of these

innovative experiences would help to move this literature out of the anecdotal into the empirical realm. Monitoring and evaluation components in Bank-supported projects could very well be designed to include provision for independent support and validation.

Institutionalization

Successful implementation of a change program means that it is sustainable, becomes incorporated in standard practice at the school level, and disappears as an innovation. In the terminology of the change literature, it then becomes "institutionalized". Institutionalization demands two things. First, it requires successful implementation. Change programs that show no results do not become institutionalized and are not sustainable. Effective use and the application of the change program in the classroom is thus a precondition for successful institutionalization. Second, institutionalization needs to be planned for at the program design stage and given attention throughout the implementation process.

Effective institutionalization is a complex task requiring the reconciliation of the often conflicting demands of implementation effectiveness and sustainability. The design of change programs will have to address not only the specific demands of innovation management but also the need to put in place mechanisms to accommodate the transition from a special program to routine operation.

This will often require giving considerable attention to the creation of an appropriate legal framework for operation of newly-created institutions or the implementation of new policies. It will nearly always imply careful design of arrangements for a gradual withdrawal of external budgetary and manpower support, the training of national administrative and professional staff and often a change in management responsibility. Institutionalization is a gradual process for which the foundations are laid during the pilot phase, but which requires explicit attention throughout implementation.

Implications

The findings of this review do not call for radical changes in procedures regarding project design and implementation to accommodate support for educational change. As the cases demonstrate, it is possible to provide effective support for educational change through Bank projects under existing procedures. The Bank, as well as other international agencies, has presently a wide array of instruments available, ranging from traditional projects (discrete packages of investments designed to achieve specific development objectives supported by loans or credits that reimburse the country for expenditures) to sectoral adjustment loans (loans that support programs of policy and institutional reform in a specific sector for which disbursements are triggered by agreed policy reform actions). In addition, lending policies of many agencies, including the Bank, are sufficiently flexible to respond effectively to a large number of vastly different situations across countries and sectors.

Yet, the study points clearly to the need to reexamine some of the fundamental assumptions underlying the design of projects that support educational change programs. While there is no need for major changes in the policies of the major aid agencies, including the Bank, there is a need to change the way staff in the agencies think about educational change. There is also a need to shift the emphasis of operational work towards implementation support (supervision) and to spread good practice, so that interpretations and applications of effective policies and operating procedures are more widely used. Good practice should affect sector work, as well as project design and implementation. This will require that the education sector staff gain a better understanding of the process of educational change and of the related operating principles that will need to be communicated to senior managers.

Specifically, these operational implications include:

for sector analyses:

- a) explicit analysis of the national experience with educational change;
- b) analysis of the capacity of national professional institutions to provide the intellectual base for the change; and
- c) assessment of the national organizational capacity to manage change and innovation.

for project design:

- a) selection of an innovation and an implementation strategy congruent with the key system variables and appropriate for the country's level of educational development;
- b) preparation of an implementation plan that includes provisions for modification;

- c) selection of indicators to monitor the progress of input delivery, the application of the program, and the impact on student achievement;
- d) design of strategies for administrative improvement at the lower levels of the educational hierarchy (school and district);
- e) focus of the implementation strategy on problems associated with the application of the change at the school level;
- f) increased attention and funding for in-service teacher training programs; and
- g) redundancy in experimentation to decrease the possibility of failure.

for implementation:

- a) systematic monitoring of project experience through the analysis of reports from local implementors and regular visits to schools and other institutions involved in the application of the change;
- b) effective systems for the adaptation -- and redesign if necessary -- of implementation strategies and project objectives in light of changes in the project environment and/or lessons from experience; and
- c) increased and more focused application of resources for supervision.

Implications at the Country Level

While the improvement in the understanding of educational change and the spread of improved practice in the design of educational development operations in the Bank and in other donor agencies is important, it should not be forgotten that educational reforms live and die by the effectiveness of the management of the change process in the country concerned. National conditions determine the ultimate success and or

failure. A better understanding of the nature of educational change and the key role of implementation among planners and decisionmakers in developing countries will be needed. These changes incorporate the following elements.

First, national authorities will need to include quality improvement and change among the top priorities of educational development. Educational change programs, especially large-scale, ambitious reforms, demand the consistent commitment of senior policymakers. It should be made clear to all involved that the program supports national educational development objectives and that effective implementation of the change is a critical part of the expected job performance. Without consistent signals -- in words and in resource allocation -- ambitious change programs are unlikely to result in improved teaching and learning in the schools, particularly in those outside the largest urban areas.

Second, implementation at the school level should be the central focus of the improvement effort. While the broad objectives of change and reform programs will be set by national policy makers, the design of the implementation and management systems will need to be undertaken from the bottom up. Procedures will need to be established for "backward mapping," whereby planning is based on the needs of the school, and changes in educational policy and administrative practice at the higher levels of the hierarchy are determined as a function of needs at the school level.

Third, program managers and planners in developing countries will need to familiarize themselves with the research findings and lessons drawn from experience with the implementation of educational change in other countries. A rich research literature, built up over the past twenty years, demonstrates that educators and planners in the developed world have become increasingly better at implementing change. The lessons from these experiences need to be adapted to the specific situation of the developing world. A capacity for applying and managing change, including the development of a corps of national "change specialists," needs to be built in each developing country.

Fourth, the understanding of how schools function in developing countries needs to be greatly increased. In the past, education planners have been busy developing proposals for change and reform of institutions they don't really know. In the developed world, research has addressed many different aspects of the functioning of schools. Studies of the utilization of time in classrooms, the effectiveness of teaching styles, the role of principals and, above all, the functioning of effective schools have contributed greatly to more effective improvement strategies. Similar studies of developing country schools are rare. Yet, they are essential if the developing world wants to improve its record in implementing programs of policy reform and change.

Finally, program managers will need to pay relatively less attention to the management of input delivery processes and considerably greater attention to the production of educational outputs. The management

task is to bring about program performance in relation to specified objectives. Measuring and monitoring program outcomes has typically been neglected by managers, often for fear of blame for failure. Yet these are essential elements in improving the management of change, requiring both formal reporting on key performance indicators and first-hand observations of school processes. Effective managers of change are close to implementation at the school level. Supervisors need to realize that deviation from the implementation plan does not imply failure but, rather, offers an opportunity for learning.

Future Research

The analysis of the cases presented in this review is based on secondary-source data available in the Bank files -- education sector memoranda, staff appraisal reports, supervision and completion reports -- and interviews with Bank project staff familiar with the cases. It therefore has severe limitations and remains an exploratory effort to identify variables that are likely to be associated with the effective implementation of change programs in the developing world. The conclusions of the review are promising and are intuitively appealing to practitioners. They need, however, to be confirmed and refined by field research.

The developed country literature on educational change has always had a strong empirical base. It includes single case studies, multiple-site studies, large-scale surveys and meta analyses. Over the past twenty years this literature has been systematically refined and has

operationalized the understanding of the process of change in education. Such an empirical base is largely lacking for the developing world, and the level of understanding and practice of educational change is suffering accordingly. Good quality case materials and careful multiple case analysis are therefore the most immediate research priorities.

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ANNEX

Case Summaries

Bangladesh

The most critical issues of education policy in the newly independent state of Bangladesh concerned primary education. Major problems included unequal access for girls and rural children; a high drop-out rate; poor quality of instruction, teacher absenteeism, and low learning achievement; inadequate school facilities and instructional materials; and insufficient recurrent funding for primary education. Initial attempts to tackle these problems during the 1970s had been largely unsuccessful.

In 1980 the government requested IDA assistance for its program for Universal Primary Education. A project was designed that incorporated lessons learned from earlier unsuccessful attempts to improve and expand primary education, and was a very large-scale experimental effort covering 10% of the country, launched without a pilot project. The change strategy included an extensive array of interventions to improve teacher and administrator training, bolster the supervision system, broaden community participation, strengthen sector institutions, and improve efficiency. It also provided for formal project evaluation.

Government commitment to the project was consistently high, in spite of economic difficulties and natural disasters. Nonetheless, management skills to implement such a large-scale project were limited. Successful expatriate involvement helped to remedy this lack of experience in the early years, and to train nationals for operational responsibility in follow-on projects. Over time, national institutions were strengthened. The PIU and seven regional satellite units successfully oversaw school construction and materials distribution. The Academy for Fundamental Education (AFE) took charge of recurrent training for teachers and administrators, and collaborated with the National Curriculum Development Council and the Textbook Board to build a strong institutional base for developing and coordinating primary education.

Teacher training was strengthened through successful implementation of a cascade training scheme. Preliminary indications were sufficiently promising that recurrent teacher training has been made a permanent feature of the primary education system, and a coordinating committee has been formed to extend the model developed in the project area nationwide. In addition, primary teacher training institutes benefited from the appointment of staff, physical renovation, and the provision of materials. Training was also provided to headteachers in school supervision, administration, and community relations. Approximately 7% of project cost was allocated for staff training.

Improved supervision of teachers, the prime responsibility of the newly-appointed Assistant Thana Education Officers (ATEOs), encouraged student enrollment and attendance, which in turn has reduced drop-out. Regular school visits by ATEOs have been combined with day-to-day supervision by headteachers to produce higher teacher attendance in project areas. These school-level improvements, coupled with the recruitment of local assistant teachers, 80% of whom are women, have improved parental attitudes toward school. Parents visit schools more often and are more willing to keep their children in school. This has had a crucial effect on enrollment increases and reduction of drop-out, especially among girls.

Benin

In an effort to lessen the underemployment and low productivity in deprived rural areas in Benin in the early 1970s, the First Education Project aimed at improving the effectiveness of training offered to rural youth. This was to be accomplished by providing basic training in literacy and agricultural vocational skills through the existing network of youth clubs that had been established through community initiative with assistance from FAO.

The strategy to bolster the educational component of the clubs included strengthening national-level program administration, developing model training programs for later replication, and evaluating program outcomes and costs. The National Support Center (NSC) took responsibility for planning and staff training, making use of expatriate technical assistance. Regional Support Centers (RSCs) were to train club staff and coordinate the integration of youth and adult training programs. The clubs' agricultural component was to be financially self-sufficient, and graduates were to be assisted in establishing themselves as farmers.

Commitment to the program was limited at all levels. The government never considered the project central to its rural development strategy, and expatriate influence on project initiation and design was strong. Initial implementation progress was slow. A change of government in 1974 heightened the instability of the environment in which the project was implemented. All program design decisions were taken by the NSC without much involvement of local-level implementors or beneficiaries. No attempt was made to ascertain the type of training people wanted and to respond to expressed need. As a result, there was limited ownership of the program at the grassroots level among the clubs, parents, and participating youth. Increasing doubts among Bank staff about the project design, insufficient funding, and a lack of skilled personnel further impeded hopes for successful implementation.

Project management was weakened by poor communication between the NSC, RSCs, and the clubs. The NSC staff had only infrequent contact with regional centers and club level operations, and failed to provide ongoing technical assistance and supervision needed to implement the project at the club level. Further, although technical aspects of the phased implementation plan had been fairly well developed, physical inputs were delayed due to substandard contracts and bureaucratic red tape.

National project management focused on hardware rather than the development and implementation of the crucial software component. NSC underestimated the importance of the pedagogical aspects of the project; teacher training and curriculum content did not receive the necessary emphasis, and insufficient attention was given to developing innovative resource materials. There was little success in achieving skills development and functional literacy. Although 1981 and 1984 evaluations emphasized the need for pedagogical reinforcement, these recommendations were not heeded. The Bank declined further support to the centers in the light of the disappointing operational results.

China

Following the Cultural Revolution, China was confronted with a serious shortage of high-level manpower and a severely weakened system of higher education. The First Education Project was designed to bolster that system by improving the quality of instruction in science and engineering departments and to increase both the number of university graduates and the volume of research. These objectives were to be accomplished through massive staff training, the procurement of advanced equipment from abroad (and supervision of its use), and increasing management efficiency.

Project design provided for the creation of two advisory bodies, the Chinese Review Commission (CRC) and the International Advisory Panel (IAP), to coordinate curriculum development, staff training and support. The design relied on hundreds of international experts to address quality problems in teaching and research, and massive foreign and internal fellowship activities to train faculty members. A key design element was the inclusion of careful reporting and monitoring schemes.

China's lack of experience in implementing such a large and complex project, as well as inexperience in cooperating with foreign institutions to solve public policy problems, were outweighed by an extremely high level of commitment to the project. The government demonstrated its support by identifying areas for Bank assistance, selecting the participating universities, and carefully preparing the project. The Vice Ministers of MOE and the Ministry of Finance personally led the mission to the United States, visiting universities that might be taken as examples for improvement in China.

MOE had sufficient authority, staff, and competence to handle implementation effectively. The establishment of CRC and IAP facilitated communication, oversight, and dissemination of relevant information. These two institutions effectively coordinated activities between the government and the universities, as well as between the universities and the expatriate specialists.

At the university level, project management was given priority, both in terms of high-level support and working-level attention to implementation requirements. Plans for each sub-project were prepared under the auspices of a senior management committee at the institutions, and detailed facility briefs and designs to accommodate new equipment were prepared by existing development offices in each university. Each management improvement was experimented with in one pilot university before being extended to other project institutions. Presidents of these institutions participated directly by supervising program improvements and communicating with CRC and IAP.

Project implementation was further strengthened by project staff's constant readiness to adapt strategies and tactics to experience. Creation and utilization of project indicators to monitor implementation progress, which were not foreseen at appraisal, exemplify such flexibility. Also important was the attempt to adapt policies to the Chinese cultural environment. For example, a range of management reform options was presented through seminars and lectures, rather than strict imposition of a particular policy.

Egypt

Egypt's drive to promote rapid growth through modernization of its system of production required large increases in the number of commercial and industrial technicians and skilled workers. Efforts of the educational system to respond to manpower needs were hampered by highly theoretical curriculum, poor equipment, and poorly trained teachers. In 1976 the World Bank initiated investment in technician training through the First Education Project, which sought to balance supply and demand of skilled construction workers. Pre-investment studies financed under that project later served as the foundation for the Second Education Project (appraised in late 1978), which was to increase the supply of industrial and agricultural technicians.

The project included upgrading six technical schools from three-year to five-year programs, introducing new curricula, and retraining technical teaching staff. The project schools would produce technicians with specializations in ship-building, petroleum and petro-chemicals, electronics, automotive and diesel mechanics, farm power and machinery, land reclamation, and agricultural production. The change strategy was to develop the appropriate curricula, re-equip workshops in the project schools, train or retrain teachers, provide students with substantial amounts of workshop experience, and solicit input from employers through advisory committees to assure continuing relevance to the needs of business and industry.

The national government demonstrated its commitment to the project by issuing decrees that redefined the status of the schools and established community advisory committees at each institution.

The reform paid careful attention to the qualitative aspect of technical training, relying heavily on competent expatriate technical expertise. Massive staff training and technical assistance were provided by consultants through fellowships and in-service training. In particular, the availability of resident consultants and short-term specialist experts at the school level were crucial to implementation success. When it was recognized that more resources were needed for technical assistance, and that fewer were required to equip the project schools, funds were reallocated to allow for an increase in expert assistance from 12 to 91 person-months. English language training for fellows sent abroad was also important in implementing the reform.

The same PIU that managed implementation of the First Project, located within MOE, took responsibility for the Second. This experience fostered relatively smooth implementation, despite early construction delays and reallocation of funds. Management gave high priority to qualitative changes and was responsible for successful curriculum adaptation throughout the implementation process. Communication between the PIU and the Bank, as well as between the PIU and its technical assistance consultant, was good.

Initial teacher training did not keep pace with the needs of project schools, which had been expanded to eight by 1983. Further, the advisory committees were not successful in assuming responsibility at the local level. Nonetheless, all eight schools were operating by completion in 1985, enrollments exceeded estimates by 25%, and graduate output for 1985 was expected to surpass 1984 output by 300%. Quality aspects of the project -- such as the success of training materials and curricula, or the employment records of graduates -- have not been evaluated.

Ethiopia

In the context of the basic changes brought about by the 1974 Ethiopian revolution, the government saw educational development as a vehicle for social change and made it a high priority. Three Bank projects initiated in the early 1970s had helped to build the institutional capacity for educational planning, project management, curriculum development, and the development and distribution of educational materials. These system resources served as the foundation for further reform.

The Fourth and Fifth Bank projects, appraised in 1975 and 1981, respectively, provided direct assistance for the reform program by gradually expanding and improving education in rural areas. First, textbooks were provided to all primary schools, followed by a program of curriculum reform that initially focused on academic subjects, but later emphasized manual work as an integral part of the primary school program. These reforms were supported by radio broadcasting in the next stage. At later stages local language teaching, double-shifting in lower secondary schools, and new methods for evaluating student achievement were introduced, and a broader range of educational materials, including science kits for all primary schools, was provided.

The implementation strategy included testing the new curricula and materials in 70 experimental schools and obtaining feedback from teachers and administrators, and introducing new material to over 30,000 teachers through 10-15 day seminars, shorter workshops, and radio broadcasts. Additional, ongoing training for teachers and administrators was provided in district-level learning centers known as Awraja Pedagogical Centers (APCs). The extent and quality of teacher training and retraining played a central part in implementing the change. Local-level support provided by the APCs to both teachers and administrators was critical to implementation success.

The ambitiousness and scale of this component were driven by broad commitment to socio-economic change, and were sustained by strong sectoral institutions. Central government support was effectively transmitted throughout the system, and funds were made available as needed. The commitment and participation of students, parents, and administrators were maintained through political pressure and motivation. Student commitment was fostered by out-of-school community work that taught additional practical skills and gave students a chance to apply what they had learned in the classroom.

Effective project management was crucial to implementation success. Although the reform was directed by the central government, implementation was highly decentralized. The new curricula and educational materials were tried out on an experimental basis and disseminated nationwide only after teacher feedback had been taken into account. Feedback and adaptation continued during training at the APCs, and teachers were encouraged to adapt the innovations in the classroom. Physical implementation was effectively accomplished by the Ethiopian Building Construction Authority; the National Curriculum Development Center was well-equipped to handle testing and finalization of the curriculum; and the Educational Materials Production and Distribution Agency produced and distributed the required books and equipment.

Guatemala

Guatemala's high rates of economic growth during the late 1960s and early 1970s did not significantly improve the quality of life for the country's rural poor. Similarly, educational provision for the rural and deprived populations remained inadequate. However, in its 1975-79 Education Plan, the government announced a plan to substantially increase education investment and introduce a new practically-oriented curriculum for lower secondary schools in rural areas. The Bank's first and second education projects supported this reform, beginning as a pilot project in 14 and then 21 additional schools, to be applied nationally in later phases.

The projects included physical inputs, in-country teacher training, and administrative/managerial training abroad. The first project (appraised in October 1968) successfully implemented hardware elements, such as procuring equipment and building facilities for the new practical curriculum. But teachers continued to emphasize theoretical teaching methods, practical instructional materials were in short supply, and science and technology laboratories often went unused. Based on the experience of the first project, the second paid more attention to curriculum development and teacher training, as well as to coordination with academic institutions and employment agencies.

The second project's overall design was prepared in 1975. Detailed implementation plans were worked out by the government during the first year of implementation. This included completion of an operational plan for teacher training and a long-term plan to establish a permanent teacher training capacity. In addition, national program staff had to be selected, fellowship candidates chosen, and curriculum reform had to be developed and implemented by an under-staffed Department of Curriculum Development.

After the 1976 earthquake, the government's priorities shifted and support for the project waned. Implementation between 1977 and 1981 focused exclusively on hardware elements. Technical assistance for teacher training and curriculum change did not begin until 1980/81. Delays were caused by political instability that affected the PIU (responsible for civil works) and the Technical Committee (one of three agencies responsible for software implementation), as well as a lack of counterpart funds and cumbersome bureaucratic procedures.

With a change of government in 1982, official commitment increased and project management was reorganized. Responsibility for the educational aspects of the project was shifted from foreign consultants to experts from local universities. This led to improved coordination among specialist teams and institutions and greater cost-effectiveness. Local experts revised the practical curricula, carried out teacher training, and formulated a model for universal application of the project components. By 1984 nearly 400 supervisors, principals and teachers were trained in prevocational subjects, school administration, and teacher training.

While project schools are now operating with the new curricula and staff, problems remain. Usage is limited to project schools, no evaluation of classroom performance has been conducted, and overseas fellowships have not been used. High recurrent costs and uncertain government commitment to secondary education militate against nationwide application.

Haiti

Beginning in 1972 the government of Haiti embarked on an education reform program to improve the quality and efficiency of primary and secondary education. This was to be done by changing the system's organization, structure, and management; introducing the use of Creole (rather than French) in the early grades; revising the curriculum and teaching methods; and providing new teaching materials. Implementation required a series of interventions sustained over 15 years by four Bank projects, and is still ongoing.

The First Project, appraised in 1975, attempted to broaden the role of primary schools to serve as community learning centers for nonformal education. This project, along with the second (appraised in 1977), laid the groundwork for future projects by reorganizing and strengthening educational institutions. External financial and technical support played a key role in launching and sustaining the reform. Over time, however, the capacity of key institutions to manage the reform was progressively strengthened. A corps of local experts and consultants play an increasingly important role in implementing the reform.

In order to attract better teachers, the reform made the teaching profession part of the civil service system, thereby providing better opportunities for professional growth and higher salaries. In-service teacher training programs, as well as training for headmasters and administrators, were developed and tested by the National Pedagogical Institute (NPI). This institution's capacity for management of the reform's educational aspects was a critical implementation variable. Inspectors and pedagogical advisors provided effective support at the school level.

With each successive project, implementation relied more heavily on incremental increases in coverage and on testing, experimentation, and review. Following the testing period, progressive large-scale introduction of new curricula and teaching methods took place. Efforts were made to try out concepts developed by NPI and incorporate school-level feedback. Although the reform's objectives remained constant over time, the policies, strategy, and tactics evolved.

While the reform attracted passive support initially, it drew opposition from the French-speaking urban elite once the decision was made to introduce Creole as the language of instruction. Over time it became increasingly clear that successful implementation depended upon gradual acceptance by all "stakeholders" (parents, teachers, administrators, education policymakers, and social and political elites). Progress at each stage had to be carefully negotiated, and implementation had to be slowed down in order to nurture broad-based support. In addition, the complexity of the reform required that it be scaled back to a more manageable level during implementation (for example, the focus shifted from community learning centers to primary education).

The reform will continue until 1992, but initial evaluations have been positive. Teachers report students in project schools learn faster, understand better, and are more alert. In addition, a number of private schools have adopted the reform or have adopted materials produced by NPI. Commitment has grown as a result of this success. Nonetheless, government support remains unsteady and the program's future is still uncertain.

Indonesia

Following a 1973 education sector survey, the Indonesian Ministry of Education and Culture requested Bank support to improve the country's teacher training system. The Bank's First Teacher Training Project was designed to change dramatically the method and content of teacher training. It entailed altering the attitudes and behavior of over 6,000 educators who had been trained in a system that emphasized theory and outdated teaching methods. The plan was to retrain teacher trainers in new methods to help them instruct teachers in student-active teaching and implementation of a new practical curricula. This was to be accomplished by constructing Learning Resource Centers at 15 colleges and 54 institutes; creating a core team of educators during the first year, who would then develop curriculum and materials during the second year; providing two-month training courses for trainers during the third year; and payment of allowances to trainers to cover the loss of secondary income during the project period.

The effort to train a large portion of teacher trainers was accomplished incrementally through the "cascade" approach. The core team of 40, selected from a pool of 600, received an orientation seminar, intensive language training and a 5-6 month course abroad. Upon their return, they developed curricula and materials, and trained 110 provincial educators as trainers of the primary and secondary teacher training college and institute staff. The design was rigid in terms of objectives and its prescription of the number of hours to be allotted to each activity. However, it required a high level of flexibility in terms of the content, testing, evaluation and revision of training programs. No explicit provision was made to adapt curricula to local conditions, but teacher training college and institute staff were involved in testing and revising curriculum materials.

The government supported the project as an important step in its ongoing plan to improve primary and secondary education. The effort to train teacher trainers was central to broad implementation of the new, practical school curriculum introduced in 1975. Commitment was fostered by the high level of national initiative and participation in the project design.

Project management suffered from insufficient staff, lack of continuity of leadership, and related unfamiliarity with Bank procedures. Delays in resource acquisition were caused by cumbersome local procedures; shortages of books and equipment hampered reform efforts; and Learning Resource Centers were not fully utilized. Communication was largely top-down, although occasionally feedback did filter back to the center and lead to change (e.g., the two-month training courses were shortened to accommodate teachers). Consultants contributed to the adaptation and adjustment that took place during implementation. However, the lack of an ongoing monitoring and evaluation system limited opportunities for adaptation.

Although project objectives were largely met in terms of training and curriculum development, the failure of the teachers colleges to provide continued support to newly-trained teachers at the school level was a serious weakness. A follow-on project, signed in 1982, has given more emphasis to training of primary teachers, and to strengthening language training for fellowship candidates. It recognized that the institutional, behavioral, and attitudinal changes begun during implementation of the First Project will take years to achieve.

Lesotho

During the 1970s the government of Lesotho launched a program to expand and improve primary education. These included instituting free primary education, upgrading unqualified primary school teachers, establishing the National Curriculum Development Center (NCDC), reviewing syllabi, and designing a textbook component. Building on this experience, a third Bank education project, begun in 1981, focused on implementing the textbook component.

The project entailed progressive expansion of textbook selection, testing, distribution, training and evaluation from a pilot in one province to a national scheme. The strategy relied in the first phase on immediate purchase of texts developed in other African countries, which would later be adapted to Lesotho curricular needs. NCDC's capacity for curriculum work and, ultimately, for textbook development was to be developed. A Book Supply Unit (BSU) was established within the Ministry of Education to manage textbook procurement, distribution and funding. This strategy allowed for the gradual build-up of expertise in national agencies, while at the same time meeting the urgent need for primary textbooks. The imposition of book rental fees and the creation of a revolving fund allowed the scheme to become financially self-sustaining. Project success was to be measured by improvement in examination results.

Government commitment was high from the start, since the reform was in line with official policy to improve the quality of primary education. The opportunity for teachers and administrators to influence the process through surveys and evaluations heightened their involvement in the program. Public commitment was bolstered by publicity given to the program during the first few years through radio spots, talk shows, and newspaper coverage.

The implementation strategy paid considerable attention to creating and strengthening the agencies needed to carry out the reform. NCDC was responsible for assuring the quality of syllabi and curricula and for providing in-service teacher training, while the BSU handled textbook procurement, distribution, and funding. Headteachers and administrators participated in procurement, needs assessment, and accounting for usage. Logistics management was dealt with in detail during the first year pilot phase. Good communication between the BSU and the independent Project Authority, the political leadership above, and the school-level implementors below facilitated implementation.

Project objectives were largely accomplished. Students in the pilot district demonstrated significant improvement on examinations administered in 1983 and 1984, and school enrollments increased 14%. By 1984 the BSU had developed considerable expertise, and BSU staff were included as part of the civil service system. By 1985 NCDC staff had developed locally-adapted versions of textbooks. When Bank funding ended in 1986, all primary school teachers had been trained and retrained; books were replenished with new subject areas; and the revolving fund has made possible continued replenishment once every three years. Although on-going evaluation of in-service teacher training is needed, the program has succeeded in building up management capacity within the BSU and NCDC to sustain the reform in future years.

Liberia

In an effort to accelerate the rural development in Liberia, that country's government asked for Bank assistance to expand the Community Schools (CS) program that had been developed with Unesco assistance on a pilot basis. The program aimed to broaden the range of education services delivered by schools and make them more relevant to rural life. The CS program, supported by a project appraised in 1974, focused on primary school development, improvement of adult literacy through the use of primary school teachers and facilities, and provision of training in practical activities for adults. It included a reorientation of teacher training, increased supervision and support, and provision of instructional materials. The project was also to support rural teacher training in order to increase female enrollments, and to strengthen the administrative services of the Ministry of Education. An evaluation was to be carried out within three years.

Initial support for the project at the ministry level was considerable, but political instability (a change of government) and worsening economic conditions overtook the program as policy priorities. At the community level, the project benefited from support for physical implementation and the provision of land, even in the face of extreme poverty. However, no effort was made to build commitment for the educational component among community members, teachers, or local administrators. Although beneficiaries valued increased access to education for children, demand for adult education remained uncertain.

Furthermore, the country's institutional base remained narrow and too weak to implement such an ambitious project. While preparation was moderately advanced by appraisal, education program management was poor. The project was essentially a standard package designed to be applied in every community, with no explicit recognition of its experimental nature. No provision was made for learning-by-doing, monitoring did not take place, and local adaptation was nonexistent. The PIU efficiently carried out procurement and construction responsibilities with relatively minor cost overruns, but failed to pay enough attention to the pedagogical aspects of the change.

Teacher training for both adult literacy and practical classes was ineffective and insufficient. All training was pre-service. Further, no specific measures to implement the project at the school level were planned; it was assumed that teachers would adopt and apply the program upon completion of the training course. There is no evidence that training had any impact, and the attempt to increase female enrollments in teacher training did not succeed. Moreover, the network to supervise and support teachers was not adequately developed, its importance having been underestimated from the beginning. Adult literacy materials were never distributed, and the planned early evaluation was never carried out.

No adjustments were made once it became clear that the quality improvement component was not working. The response to initial failure was to drop some of the project's objectives, rather than to intensify efforts to solve the problems. For example, rural courses were discontinued due to poor design, lack of equipment, and an insufficient number of trained staff. The CS program was effectively discontinued in 1980. The only outcome at the school level that persists is increased access to education. In terms of educational change, the project failed to reach its objectives.

Malawi

In 1965 the government of Malawi established an alternative to the formal secondary education system -- the Malawi Correspondence College (MCC). It was created in response to demand for secondary schooling that could not be met by the formal system, where access was limited to 9% of primary school graduates. MCC uses radio and correspondence programs to teach its courses. In addition, students can seek help from underqualified teachers in special study centers and in regular secondary schools at night. Students prepare for regular junior and senior secondary school examinations. The only entrance requirements are possession of a primary school-leaving certificate and payment of a fee for correspondence materials.

Following up on a 1976 review of MCC activities, the Bank's Third and Fifth Education Credits to Malawi supported developing MCC as the center of an alternative system of distance education, supported by a gradually increasing number of study centers and night schools in rural areas. The credits covered the construction of 29 permanent centers to replace makeshift quarters; provision of materials and back-up radio programs; training for MCC teachers, managers, and headquarters staff; and establishment of an Evaluation Unit. The new quarters were to include two classrooms, office and library space, and simple equipment, including a radio, radio-cassette recorder, and a science demonstration kit. In addition, the best MCC students were to be offered an opportunity to enter regular secondary schools as a performance incentive.

Official commitment to MCC was high, since the program represented an inexpensive way for the government to respond to the popular demand for increased access to secondary education. Because the program had been initiated internally in 1965, the Bank projects were incorporated into an ongoing government-supported reform. Further, in light of the program's history over approximately 13 years prior to Bank involvement, the prospect for successful implementation was relatively certain.

The projects drew heavily on expatriate assistance, beginning with recommendations for program improvement, through instructional program design and efforts to improve internal efficiency. Physical implementation was carried out well, and system expansion was implemented gradually, but effectively. Good communication and coordination between MCC, the Ministry of Education and the Malawi Broadcasting Corporation fostered implementation.

The program was not highly resource-intensive, and over time the cost per MCC candidate declined. This made it possible to continue to expand the system with limited financial resources. The gradual expansion led to progressively more ambitious innovation over time and allowed for the development of competent staff and increased management capability. Staff training, conducted both in-country and abroad, played an important role in strengthening the program.

Overall pass rates for MCC candidates on the National Junior Certificate Examination have varied between 10% and 22% over the past few years. Although these rates are low compared with regular secondary students, they are satisfactory in light of MCC's much lower admissions standards. Issues demanding additional attention include the need for stronger supervision and support, and greater feedback from instructors and center directors.

Malaysia

In 1970, following civil unrest, the government of Malaysia decided to extend ongoing educational innovations to the under-developed states of Sabah and Sarawak. The policy entailed integrating these autonomous states into the national educational system, increasing access to relevant education and skills for rural people, strengthening science and practical subject teaching, improving teaching methods, and retraining teachers. Expansion of the existing educational radio and television (ERTV) program was to play an important role in achieving these objectives.

The Bank's Third Education Project supported the improvement and expansion of ERTV, among other components. Appraised in 1974, it was to cover all primary and secondary students in Sabah (which had a television system) and Sarawak (which was to have one by 1975) by 1978, and to be completed by 1980. The project was to construct and equip two broadcast studios and supply 900 radio receivers; supply TV studio equipment and 2,200 TV sets; equip 13 Education Resource Centers (ERCs) to support utilization of ETV and ER in the schools; and provide transport for maintenance technicians.

The initial six-year implementation period was extended by four years to accommodate initial delays in civil works. Project implementation encountered problems from the beginning due to a lack of staff, a shortage of scriptwriters and skilled program staff, and the constant breakdown of equipment. Implementation in Sarawak benefited from a large technical team to service machinery in the field and manage the infrastructure; technical support in Sabah was virtually nonexistent. Due to transportation problems and to the cost and difficulty of obtaining spare parts, maintenance was inadequate. Project management's emphasis on hardware elements discouraged effective delivery of ERTV software.

Despite government support for the broad policy for socio-political integration of Sabah and Sarawak, support for the specific ERTV component was not demonstrated. No efforts were made to build commitment among teachers or to explain the methods of conducting distance education classes. Staff were merely provided with programs and packages of materials, then left on their own to implement them. The design did not sufficiently provide for the training of teachers, ERC staff and administrators; school-level support for teachers; adaptation of classroom experience; or the handling of complicated coordination and scheduling problems. Failure to provide ERC staff with the necessary training meant that they acted more as suppliers and administrators than as professional resource personnel. Implementation relied on a top-down management strategy, thus precluding feedback from the school-level to the center. As a result, motivation was low. Only where teachers or headmasters were already motivated to implement the program, or where a special staff person was appointed, was any success achieved.

Institutional incorporation of these programs has not been satisfactory. It is likely that if equipment cannot be maintained, the program and its goals will disappear. Teacher training, motivation, low utilization and recurrent costs remain serious problems. Moreover, no evaluation of the impact of ERTV on student performance has been done or is planned. Much experimentation and adaptation at the school level will need to be done if the program is to succeed in the future.

Mali

During the early 1970s, the Malian government was concerned that the poor quality of teaching and lack of a practical component in the lower secondary science and technology curriculum were hindering students in their pursuit of higher education and employment. The government thus decided to seek Bank support for a project to establish 11 science and technology centers, to be shared by four to six nearby schools, covering approximately 13 percent of lower secondary school students. The project also provided for the development of new curricula (with increased emphasis on science and technology), the training of center directors and teachers, and increased recurrent budget allocations for science and technology teaching. Although this design was relatively straightforward, it represented an ambitious departure from existing practices in Mali.

Government support for educational development in general was strong, but there was no particular commitment to the project's integrated approach to science teaching. This limited national support for the project's education objectives was further diminished by the high degree of expatriate involvement in the design and early implementation stages. The expatriate advisors involved the Malians at the National Pedagogical Institute (NPI) only marginally in developing the implementation strategy - and failed to consult with them during the rest of the process - despite the fact that NPI was staffed by relatively well-trained and competent professionals. The NPI staff never accepted the integrated science teaching approach and subsequently rejected it. In addition, the advisors' failure to consult with teachers and administrators in the planning stages undermined support and commitment from those groups.

Implementation problems arose from the start and were never overcome. In the early years the project suffered from a shortage of government funds to meet operating costs. Although project preparation had been moderate, poor coordination between the implementation of physical and educational elements caused serious difficulties. Delays in design work and construction led to postponing the opening of the first two centers, by which time the training of teachers and center directors had long been completed and the technical assistant had left the country.

Project management failed to give adequate consideration to issues related to classroom-level use of the plan and to practical administrative issues such as coordination and scheduling. Little attempt was made to communicate project objectives to teaching staff or to solicit their input during implementation. Similarly, heads from feeder schools were not involved in project development, and center directors were never really committed to the project's educational objectives. Moreover, once the centers opened, no center-based training or technical assistance was made available to teachers, directors, or feeder school heads.

Six centers became operational after completion, but by early 1982 were not being utilized as intended. This was due to limited use of the programs specifically designed for those facilities, the insufficient number of teachers specially trained to use the sophisticated equipment, and the shortage of service staff to maintain the equipment. As the new equipment gradually fell into disuse, instruction returned to a theoretical, non-practical base.

Morocco

The educational system that Morocco inherited at independence was not geared to producing a technically skilled labor force necessary for accelerated economic development, or to reducing discrepancies between rural and urban areas. Central problems included an overly academic curriculum, unqualified teachers, and high drop-out and repetition rates. The 1973-76 National Development Plan began to address these problems by expanding primary education in rural areas, encouraging increased enrollment of girls, and reorienting the primary curriculum toward practical skills training.

In line with this plan, the Bank's Third Education Project, appraised in March 1976, supported experimentation with a revised curriculum in 47 primary schools (1.5% of all primary schools) before nationwide application. In addition to curriculum development and testing, the project included teacher training, constructing and equipping specialized facilities for practical activities, introducing automatic promotion and remedial classes, reinforcing the use of Arabic as the language of instruction, supplying housing for rural teachers, providing school lunches, and evaluation.

The government demonstrated its commitment to the project by selecting schools in deprived, rural areas; establishing a policy requiring the use of Arabic as the medium of instruction in primary schools; consistently providing funds for training and equipment throughout the project, and allocating increased funding for all primary schools. Nonetheless, the project got off to a shaky start; official participation in preparation was only moderate, and no special effort was made during the design phase to build commitment among communities, administrators, or teachers. Construction was delayed for three years due to the remote location of many of the schools and the lack of PIU supervisory staff. Supervision problems were not resolved until 1980, when the PIU relinquished oversight of the civil works to the Regional Educational Directorates.

UNICEF and UNESCO provided valuable assistance to the Ministry of Education in formulating a practical work curriculum and testing it for two years in 120 project and non-project schools. Following the testing, a group of specialized teacher trainers modified the syllabus. The National Pedagogical Institute provided intensive training courses for inspectors, teacher trainers, and selected headmasters to enable them to introduce the new practical skills curricula and Arabic language textbooks. Commitment among teachers grew during implementation, and their enthusiasm for the reform was high. They not only accepted the new syllabus, but adapted it to their needs through the creation of ad hoc committees.

Despite progress in implementing the new curriculum, increasing enrollments, and MOE's improved management capacity, several problems remain. Repetition rates remain high, and several project elements (e.g., the automatic promotion procedure, remedial teaching plan, school lunch and teacher housing schemes) were not implemented. Concerns about high recurrent costs, the sufficiency of training, adequacy of support and supervision at the school level, the strength of national institutions, and the absence of adequate plans for project monitoring raise serious questions about the reform's sustainability. Without some redesign to reduce operating costs, prospects for nationwide replication are not good.

Nicaragua

Until the early 1970s, provision of education for rural populations in Nicaragua had been neglected. The government began to redress this problem under the Second Education Project, appraised in 1971. The project aimed at expansion and improvement through the construction of classrooms and organisational change at the primary level, as well as development of secondary school curricula. Between 1976 and 1979, implementation was hampered by limited preparation of civil works and delayed software development. Moreover, the political and economic upheaval following the 1976 earthquake adversely affected government commitment and further slowed the pace of implementation.

Official commitment increased dramatically, however, after the 1979 revolution. The government placed high priority on the project, since it was in line with the revolution's support for rural areas. An official campaign to build community support produced grass-roots participation, generated counterpart resources, and accelerated Bank disbursement. The government reduced bureaucratic impediments, gave the PIU considerable autonomy, and provided the necessary human and financial resources. After 1979, a stable PIU staff succeeded in mobilizing participation and in coordinating effectively with the Bank and other agencies.

The project entailed a large-scale experiment based on 18 "education nuclei." Each consisted of a central school (offering 6 primary grades), base schools (offering up to 6 grades), and several associated schools (offering 4 grades). The central school was to provide technical and administrative support and act as a community learning center for youths and adults. The project planned to introduce automatic promotion of pupils, double shifting, and multi-grade teaching in the associated schools. It included training for administrators and teachers in-service programs and fellowships.

The Bank and the Government collaborated effectively to adapt the plan to changed circumstances. The project's scale was reduced after 1980 and its pace was speeded up. But efforts to save time -- such as shortening the teacher training program -- were ultimately counter-productive. Cut-backs in support for teacher and administrator training, reductions in the number of primary schools, and increases in the number of lower secondary schools watered down the reform considerably. Although management and pedagogical support were ultimately decentralized, administrative and educational problems persist. Community self-help efforts were rewarded with technical assistance, building materials, and accessible education. Teachers, however, were expected to volunteer their participation in support of national reconstruction.

Despite the revolutionary zeal that the new government brought to the project, implementation was only a partial success. Mandating compliance, the government succeeded in bringing about hardware implementation, but had far less success in terms of quality improvements in teaching. Too much attention was paid to quantitative elements, such as school construction and increased enrollments, and too little to teacher training, school-based support, production and supply of instructional materials, and administrative links between the center and the regions.

Pakistan

Education in Pakistan has suffered from limited opportunities for basic education, low enrollment and performance rates, high drop-out rates, poor quality teaching, and under-financing (especially at the primary level). Religious and cultural factors regarding the role of women in society lead to disparities between male and female enrollment ratios.

In response to these problems, the government, along with assistance first from AID and later from the World Bank, initiated measures to increase access (particularly among girls), control costs, and improve the quality of primary education. In 1978 a five-year, large-scale experimental project was initiated that included organizational change, development of community support for primary education, teacher training and supervision, provision of materials, and the construction of classrooms. The project covered nearly 8% of the nation's primary schools, teachers, and enrolled children, and focused on rural areas only. The approach was designed as a learning experience to identify the most effective intervention methods. There was considerable uncertainty as to which experimental elements would be most effective, and it was expected that interventions would have different outcomes in different regions and localities.

The program included: recruiting local residents with little formal education to serve as "assistant teachers"; providing preservice and recurrent training for teachers and assistant teachers, conducted by a core national staff through a cascade training program (training focused on parent/community relations and management of multi-grade classes); creating new posts of "supervisor" and "learning coordinator" below the district level, to provide pedagogical support to primary school teachers and to strengthen community relations. A key feature of the design was an evaluation component. Special units at the federal and provincial levels were established to manage the project.

Implementation got off to a rocky start, with uneven central government commitment, high staff turnover, slow acquisition of critical resources (e.g., learning materials and vehicles for supervisors), poorly planned and executed civil works, and an overly complex evaluation design. The project was salvaged only after an in-depth supervision mission conducted an intensive field survey and recommended adaptations to the implementation strategy. In particular, the evaluation approach was reoriented toward "action research", and more committed project management was put in place. Government commitment grew as a result of the Bank's willingness to analyze the implementation problems and redesign the strategy.

The cascade training approach did not work well, leaving teachers insufficiently trained in necessary subject areas. Nonetheless, the creation of a stronger supervisory system helped improve the attendance and performance of teachers. Further, creation of learning coordinator and assistant teacher posts produced improved community support for primary education, which encouraged student attendance and performance.

Paraguay

The Bank's Third Education Project, appraised in late 1976, supported the Paraguayan government's 1969-1980 Education Development Plan to improve education in rural areas. Rural development in Paraguay was handicapped by a number of factors, including an insufficient number of rural schools offering a complete primary education cycle, a lack of basic teaching materials and equipment, inadequate teacher training, and insufficient supervision. Since the 1960s the country had initiated a number of education innovations.

The project established a system of nuclear schools that were to offer the full primary-school cycle and function as well-equipped rural community centers (RCLCs). They were to be surrounded by a number of associated schools to serve younger children who could not walk the distance to the central school. The schools were to be supported by a school-based supervision system that would be carried out by RCLC directors, who were given motorbikes for travel to dispersed associated schools. The project relied on the use of multi-grade teaching for schools in small communities. It also included implementing a revised basic curriculum (which had been developed in 1973); offering nonformal education and training to out-of-school youths and adults; providing in-service training for 2,700 teachers, headmasters, and supervisors; printing textbooks and teachers' guides; and strengthening MOE.

Although official commitment was strong during the first few years, in 1980 the government modified the nuclearization concept from a two-tier system (RCLC and associated schools) to a three-tier system that included RCLCs, "sub-central" schools (which provided four years of primary education), and associated schools (which offered two years of primary education). The addition of a third tier, which reduced the need for multigrade teaching, adversely affected successful project implementation. Without clearly demonstrated implementation success, government commitment could not be sustained. In addition, commitment was further diluted by a number of other reforms that competed with the project for official attention.

Project management proved to be weak. The PIU that had been set up during an earlier Bank project did not provide the effective management that had been anticipated. Supervision of construction was insufficient and physical implementation and curriculum development were delayed one year and three years, respectively. Nonetheless, the project did succeed in constructing schools, increasing enrollments and promotion rates, and decreasing dropout and repetition rates. Teacher training was implemented effectively, but a shortage of primary school teachers persists due to the rapid expansion of basic education. Supervision was increased, but headmasters were overextended between their responsibilities for running the central schools and for supervising teachers in associated schools.

Although the project achieved some success under the favorable conditions of a Bank pilot project, this success was not sustained once Bank support ended. Improved supervision could not be sustained, for example, once funding for motorbike fuel and repairs ended. Moreover, pay increases that had been promised to teachers never materialized.

Senegal

The Senegalese government's recognition of the need for a more scientifically and technically trained labor force spurred efforts to revise the secondary school curriculum in the early 1970s. Quality problems were acute due to the short supply of specialized science facilities and teachers. Bank support was requested to strengthen science teaching and to add a new subject called "introduction to technology" for lower secondary students. These reforms were expected to improve preparation of graduates for further studies and the labor market in light of economic modernization.

The strategy revolved around establishing 11 Science and Technology Centers (STCs), each to draw students from three or four existing lower secondary schools. It also included implementing new curricula in these centers, and providing training for center directors and teachers, as well as for heads of the feeder schools.

During the first five years, implementation was slowed by limited preparation, tardy hardware selection, procurement difficulties, cost overruns, and insufficient attention to the non-construction aspects of project design. Centers tended to be over-designed, and some of the equipment was too sophisticated and inappropriate for effective use. Modest government commitment and a weak institutional base increased the difficulty of implementing the educational aspects of the innovation.

Only after the creation of the National Coordinating Committee (NCC) and the arrival of a UNESCO technical assistant did the project take off. NCC staff established close ties with the centers and local implementors. The decision to delay training and technical assistance until physical implementation was completed proved to be wise.

Intensive training was a critical element in project design. Teachers received initial training as well as annual refresher courses, and were gradually over a three-year period introduced to the new equipment. Regular support and on-the-job training were provided by the NCC through visits to the centers. Center directors also received training, including a six-week study tour of Belgium, where the STC concept had been successfully implemented. Directors' training underlined the importance of scheduling, problems of rotation and movement of students, and inventory management. NCC assistance to heads of feeder schools also emphasized coordination and scheduling.

Adaptation of the curriculum and teacher training took place in the light of classroom experience. High investment costs, exacerbated by implementation delays, led to reducing the number of STCs from 11 to 8. Creation of a Maintenance Center to produce and maintain low-cost equipment reflected a positive reaction to the recurrent cost problem. Commitment grew with the project's success. Staff responded well to being part of a positive and visible undertaking, and developed a strong "esprit de corps." Official commitment has been demonstrated in the stability of public budget support (despite financial crises), the introduction of science and technology in the country's examination system, and a proposal to provide the NCC with a formal legal foundation.

Thailand

Concern about the skills and attitudes of secondary school graduates in Thailand led in the late 1960s to experimentation with "diversified" secondary school curricula, supported initially by CIDA. The third Bank education loan supported implementing such a curriculum in 32 rural general secondary schools. Three subsequent projects have supported further expansion and improvement of the diversification. In addition to academic subjects, the project schools offer pre-vocational courses in agriculture, home science, commerce and farm mechanics. Projects relied on support for the National Curriculum Development Center (NCDC), pre-service and in-service training for teachers and administrators, and continuous experimentation and study to determine which practical subjects to offer.

Government and grassroots support for diversification were created and have been sustained by the belief that practical training for secondary students would lead to a more productive workforce. Over time, however, the initial emphasis on skill training has given way to emphasis on attitude change and preparation for technician and engineering training. Commitment to the reform has existed since the late 1960s, prior to Bank involvement, and included the understanding that successful implementation of a reform of this nature would require consistent commitment over a long period of time. This incremental approach to change, or controlled expansion of the reform, was the key element in the implementation strategy.

During the early stages, project coordination was impeded by the PIU's lack of authority and unclear jurisdiction. Initial implementation was delayed for three years due to financing and construction problems. However, with IDA assistance, the PIU was restructured and a central procurement unit was created within MOE. Foreign specialists worked well with NCDC staff to carry out curriculum development and in-service teacher training. Local experts effectively assisted in the testing, development and production of instructional materials. Although direct contact between central managers and local implementors was infrequent, the system provided for input and feedback from the local level through the testing of materials, small-scale surveys, and a major evaluation. Overall, consistent central government priorities, resulting from mandated change, were effectively implemented by a competent administrative system. Yet over time, significant changes in design and implementation strategy were able to be incorporated.

In-service training, based on the "echo" system, was at the core of efforts to implement the new curriculum. In the later years training was carried out largely by regional training centers, and teachers were trained in different groups according to their experience and teaching requirements. Principals, administrators, and heads of practical arts departments were also trained. In addition, an advisory committee was established to supervise and direct the adaptation of curriculum and syllabus to local needs.

After nearly 20 years, the projects have provided 50% of all secondary schools with equipment and staff training to implement the diversified curriculum. Although the later projects built upon experience gained during the early years, uncertainty persists due to efforts to respond to local needs and conditions. Cost-effectiveness studies are being conducted and efforts are continually being made to devise more efficient ways to achieve project objectives.

Tunisia

As part of its policy to create a more relevant and efficient educational system, the government of Tunisia embarked in the early 1970s on a series of experiments to integrate practical skills into the primary curriculum. The Bank's Third Education Project (appraised in 1975) provided assistance for the ongoing ITM program (Initiation aux Travaux Manuels), which included agricultural, industrial, and industrial/ agricultural curricula. The project was to extend ITM to all primary schools, expand and improve teacher training colleges to help teachers implement the ITM concept, and establish post-primary institutions as prevocational training centers.

The reform was a radical departure from the previous system that favored urban over rural schools and relied on an academically-oriented curriculum. It was complex in nature, requiring curriculum change, teacher training, workshop and school construction, and community organization. It was also resource intensive and large in scale, with planned expansion into rural areas nationwide. However, since the project could draw on the earlier ITM experience for grades 5 and 6, the level of uncertainty was moderate.

The government was committed to the project and provided the necessary funding and institutional support. Although the reform was initially conceived as a top-down dissemination strategy, the project evolved into -- and benefited immensely from -- a grassroots effort during implementation, which included the community-wide sale of agricultural and textile products made by the students. Commitment of parents and the community at large grew further as the program demonstrated success; over time their support became a key element in explaining the program's ongoing strength.

The dedication and continuity of PIU personnel, located within the Ministry of Education, were also critical to project implementation. MOE's newly-created Directorate of Primary Education was aided in its promotion of local school development by headmasters and teachers who went to great lengths to make space to accommodate additional classes. Regional education administrators and inspectors were actively involved in the implementation process. The Ministry of Agriculture also contributed to the design and content of the practical activities program in their sector, and provided advice on implementation at the regional and school levels.

In-service teacher training was also emphasized, and was supported by a range of other training activities for regional administrators and high-level government officials. Teachers received training at two new teacher training colleges (TTCs), as well as at a special center for the training of ITM teachers. TTC programs were revised to include some practical ITM training for all students, so that all graduates are now expected to be able to teach ITM activities. Sufficient funding existed for the TTCs to provide in-service training year-round, and special courses were held for inspectors and teacher trainers, with support from UNICEF.

Communication between MOE and MOA, as well as among schools, communities and employers, was effective. To accommodate changes during implementation -- in particular, replacement of the post-primary nonformal component with extension of the school-level ITM approach for grades 7 and 8 -- extensive discussion between the government and the Bank took place. Bank agreement to the changes proposed by the government fostered smooth adaptation.

Yemen Arab Republic (YAR)

YAR faced seriously low levels of literacy and skills development of its population when it began to emerge as a modern nation. The government's desire to address these problems among the country's youth and adults led to a series of Bank education projects begun in the early 1970s. The First Project, appraised in 1973, focused on formal education and included a small experimental nonformal training component. The Second Project continued and intensified support for nonformal education. Known as the Basic Training Scheme (BTS), this project formed the foundation for two subsequent projects (the Fifth and Sixth), the last to be completed in 1990. BTS was to rely on District Training Centers (DTCs) to disseminate basic vocational skills and literacy training, and on a Basic Training Facility (BTF) to support village-level training initiatives.

The First Project was identified and initiated by Bank staff, official support was uncertain, and implementation did not take place during the early years. However, once experts fleshed out the scheme and prepared a detailed change plan that emphasized flexibility, responsiveness to local needs, and mobilization of villages, implementation began and commitment grew. The initial implementation problems were overcome by Bank staff persistence in the early years, combined with government support thereafter. The development of basic education was viewed as a long-term objective that required a high level of continuity and support over many years.

The government provided staff and created several effective institutions to support the program. Over time staff developed skills in management, curriculum design, and project implementation. Emphasis was placed not only on skills training, but also on the institutional development to make the training work. Operational responsibility for the design and implementation of training programs was delegated to the DTCs. In addition, community councils were created to advise DTCs on relevant training, and district councils were set up to give the centers advice on program development and to monitor training activities. A national board was established to set broad policy and to approve DTC proposals for funding of training activities from the BTF.

Built-in flexibility and responsiveness to the expressed priorities of local beneficiaries, the "bottom-up" approach, was key to the project's success. At the local level this meant providing room to redesign curriculum to fit a particular village, for instance. It also meant reducing the duration of the basic skills courses to accommodate a larger number of enrollees and expanding courses offered to women in response to local feedback. At the national level, adaptation led to altering the terms and conditions of the Basic Training Fund in order to enlist local support. Although policy decisions were made by high-level management, they were influenced by reports of success or failure channeled up from below. The scale of each DTC was kept moderate, with gradual increases based on lessons learned from experience at each stage of implementation.

Now that commitment has been mobilized, institutions have been built, and the project has been operating and expanding for several years, the next phase will focus on evaluation, further expansion, and institutionalization. Future objectives include less reliance on expatriate staff and provision of more systematic training for Yemeni teachers.

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