Project Management for Educational Change

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December 1985
Discussion Paper
Education and Training Series
Report No. EDT12

PROJECT MANAGEMENT FOR EDUCATIONAL CHANGE

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Abstract

When the World Bank began lending for education, the education sector adopted a model of project preparation and design that was developed essentially in the infrastructure sectors. This model emphasized detailed identification and costing of project inputs and careful planning for their timely delivery over a four- to six-year period. Project management arrangements reflected in general this emphasis and were designed to meet, first and foremost, the requirements of physical implementation, procurement and financial management. This model served the sector reasonably well, as long as the provision of infrastructure and equipment was a dominant lending objective.

Education lending has gradually shifted away from this emphasis on infrastructure and now focuses increasingly on issues of sectoral policy, institutional development, and improvement of the quality of education, aiming at "educational change," or the implementation of planned improvements in the education system aimed at teaching practice or learning conditions with a view to enhancing student performance and learning outcomes.

Some of the main points made in this paper are as follows: 1) Selecting project objectives that are feasible and sustainable in the context of the available human and financial resources is a first step towards improved management performance. 2) Successful educational change requires a balance between the need for improvement and the capacity for implementation in the individual country. 3) The design of project management arrangements will have to take into account the idiosyncratic nature of educational change processes and allow for learning by doing and flexible implementation strategies. 4) Early planning for and preparation of project management arrangements is the key to good implementation. Designing project management arrangements cannot be limited to designing an organization for operational management; it will have to include arrangements for horizontal and vertical coordination, communication and collaboration. And finally 6), adequate staffing (including education specialists), appropriate coordination mechanisms, and, above all, a mind-set open to learning are the key ingredients for successful management of educational change.
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The nature of the Bank's education portfolio is gradually changing. Institutional and policy objectives, aiming at improving the quality of education through processes of educational change, are becoming increasingly important. How to implement programs of educational change is one of the questions that increasingly preoccupies the Education and Training Department. Hence a review of the past 20 years of the Bank's experience in implementing projects involving educational change was started recently.

In this paper I analyze the implications of the increasing emphasis on educational change objectives in education lending for the design of project management organizations. The paper focuses mainly on the non-physical aspects of project implementation, since physical implementation has received much attention in the past and is relatively well known.

This paper is not based on empirical evidence gained from a systematic review of project management experience. (The review by Middleton et al. (1985) of some of the Bank's experience with education project management did, however, give me the incentive to write up some ideas I have nurtured for some time and provided valuable background.) Rather, I have attempted, on the basis of an extensive literature review, to develop a conceptual framework and to identify key variables for the design of project management organizations which are responsible for implementing educational change projects. As such, the paper is the first of a series of steps being undertaken by the Education and Training Department to gain a fuller understanding of some of the characteristics of the management of educational change.
I. INTRODUCTION

Education Project Management Performance

1.1 Project management performance is an overriding implementation concern in all sectors in the Bank. Education is no exception, although management performance in the sector is rated well above the sectorwide Bank average. Projects staff reported that, as of the end of FY84, 40% of the education projects in the Bank/IDA portfolio were affected by management problems, but in only 25% of these projects were the problems considered to be major. It is difficult to analyze the management problems commonly experienced in education projects, as there is no generally accepted definition applied across the sector. Projects staff report under the heading of "management problems," a wide variety of implementation difficulties related to, for example, tendering, contract award, preparation of disbursement applications, planning, cash-flow management, and recruitment of consultants. As a consequence of such problems, buildings may remain unfinished, equipment may turn out to be too sophisticated, new curricula may not be implemented, or teachers may be trained long before or long after the textbooks arrive. Non-achievement of project objectives, cost overruns, and/or cancellation of project elements are the inevitable result. In fact, these problems are only symptoms: they reflect and stem from more fundamental issues of project design and implementation strategy.

1.2 When the Bank began lending for education, the education sector adopted a model of project preparation and design that was developed essentially in the infrastructure sectors. This model emphasized detailed identification and costing of project inputs and careful planning for their timely delivery over a four- to six-year period. Project management arrangements have, in general, reflected this emphasis and have been designed to meet, first and foremost, the requirements of physical implementation, procurement and financial management. This model has served the sector reasonably well, as long as the provision of infrastructure and equipment was a dominant lending objective.

Purpose of the Paper

1.3 Education lending has gradually shifted away from the earlier emphasis on infrastructure and now focuses increasingly on issues of sectoral policy, institutional development, and improvement of the quality of education, aiming at educational change.1/ Nonetheless, the design of project management arrangements has reflected this change in emphasis of lending objectives in only a few cases. This may be one of the reasons why the performance of education projects in respect of their qualitative

1/ In this context, educational change is defined as the implementation of planned improvements in the education system aimed at teaching practice or learning conditions with a view to enhancing student performance and learning outcomes.
objectives has been less satisfactory than in respect of their quantitative objectives.

1.4 A second concern, in respect of project management performance so far, is the limited progress that most borrowing countries have made towards developing an institutional capacity for education project implementation. Only recently has institution-building for project management become an important lending objective in the education sector. Consequently, education projects have often been implemented by temporary organizations--project implementation units--which presumably would disappear upon project completion.

1.5 The question that needs to be addressed, therefore, is how the Bank's borrowers can best develop a permanent capacity for managing projects in a situation where most projects have ambitious objectives for educational change. Obviously, there is no single or simple answer to this question. The optimal design of project management arrangements will be contingent upon the nature of the project, the specific country conditions, the institutional development objectives, and the implementation strategy and dominant project management functions which follow from it. The interaction of all these factors will determine the design of a project management organization. In putting together the organization, decisions have to be taken concerning the relative autonomy of the project, its place in the hierarchy and its relationships with other organizations concerned with the project as well as procedures for control and communication.

1.6 Figure 1 below shows the process flow for management planning described above, which underlies the analysis in this paper. It should be noted that the management planning process is by no means as smooth and linear as Figure 1 appears to indicate. Educational change is an iterative process; for example, constraints to the existing administrative capability will influence the selection of project objectives, and interorganizational relationships will affect the choice of the implementation strategy. The main point of Figure 1 is that it presents in a structured way the variables that influence the design of a project management organization.

Summary

1.7 Many management problems are, in fact, problems of project design. Chapter II discusses issues related to the feasibility and appropriateness of project objectives. Selecting project objectives that are feasible and sustainable in the context of the available human and financial resources is a first step towards improved management performance. However, too much emphasis on feasibility may lead to an overemphasis on what is known to work. Innovation and change are at the heart of the development process and are priority areas for Bank support. Unfortunately, implementing educational innovations in developing countries and changing the behavior of administrators, teachers or pupils are processes fraught with uncertainty. In many cases, the solutions to the problems remain tentative and need to be tested and adapted to the local environment. Thus, managing this uncertainty, as distinct from implementing a comprehensive plan or "blueprint", is the principal challenge in managing an educational change project. Successful
Figure 1

FRAMEWORK FOR THE DESIGN OF AN EDUCATION PROJECT MANAGEMENT ORGANIZATION

Institutional Development Objectives
- Developing project management capability
- Establishing a permanent organization

Environment
- Administrative capability
- Interorganizational relationships
- National priorities and context

Project Organization
- Hierarchical position
- Autonomy
- Coordination structures

Project Characteristics
- Complexity
- Innovation
- Feasibility
- Stage of program implementation

Implementation Strategy
- Delivering the program
- Organizing decisionmaking
- Dealing with uncertainty
- Mobilizing demand
- Promoting/sustaining commitment

Management Functions
- Planning
- Directing
- Coordinating
- Communicating
- Controlling
educational change requires a balance between the need for improvement and the capacity for implementation in the country. Furthermore, the design of the project management organization should adapt to the implementation stage of the change program. Educational change is a dynamic process with at least three stages: experimentation, demonstration, and generalization. As the program develops, the focus of project management will shift from emphasis on testing the effectiveness and efficiency of the change program to emphasis on implementing the innovation in a variety of local settings.

1.8 Good project planning and preparation is the key to good implementation. This is being recognized generally for physical components, but it is as true for the educational elements of the project. Chapter III identifies the main issues that need to be addressed in designing an implementation plan for an educational change program. Rather than detailing inputs to be delivered five years hence, such a plan should provide the framework within which operational decisions needed to accomplish the project goals can be taken. Decisions on the implementation strategy will, to a large extent, be contingent upon the magnitude (size) of the educational change and the geographical coverage (scope) of the program. Although the relative importance will vary, in the context of this framework, project managers will have to pay considerable attention to mobilizing demand for the program, establishing procedures for decision-making, dealing rationally with uncertainty, and promoting and sustaining commitment on the part of political leaders and local implementors. Thus, project design and project implementation become an integrated learning process that brings about change incrementally.

1.9 A learning-oriented implementation strategy has considerable implications for the way in which the traditional project management functions of planning, leadership, coordination, communication and control are executed. These implications are discussed in Chapter IV. Effective strategic planning focusing on essential project design decisions, in respect of objectives and program delivery, provides the frame for the detailed operational planning necessary to ascertain effective logistics. Simple monitoring systems aiming at rapid information feedback are the key instruments for learning, allowing a continuous reassessment of plans in the light of implementation experience. To nurture a learning attitude in the organization, the leadership needs to be firm, open to learning from experience, and ready to support local implementors. Dealing effectively with individuals and organizations concerned with the project but outside the immediate control of project management, is another crucial factor affecting project success. Hence, effective coordination and communication are essential management functions which, unfortunately, are frequently neglected. Finally, control mechanisms should be oriented towards monitoring performance rather than compliance with procedures.

1.10 Issues related to the design of project management structures are discussed in Chapter V. In most cases, education project management takes place at three levels: (a) top level, where the designs are taken on what the project objectives should be and how they will be achieved; (b) operating level responsible for acquiring inputs and achieving the results
on time and within cost; (c) local level, where local staff have the actual responsibility for implementing the innovation or change at the classroom level. Each of these levels has its own role to play. The project management organization for educational change projects should be designed bearing in mind the imperatives of the implementation strategy and the key management functions to be carried out at each level. Designing project management arrangements cannot be limited to designing an organization for operational management; it will have to include arrangements for horizontal and vertical coordination, communication, and collaboration. Project implementation in a learning mode means that project managers are implementing a continuously evolving program which requires firm leadership in combination with the provision of considerable assistance to local implementers. In many respects, the project organization should be designed as a learning institution oriented to managing change processes. To be able to do this, it should be located at a hierarchical level commensurate with the importance of the project objectives and resources. Adequate staffing (including education specialists), appropriate coordination mechanisms, and, above all, a mind-set open to learning are the key ingredients for successful management of educational change.

II. CHOOSING PROJECT OBJECTIVES

2.1 Many management problems are, in fact, design problems. Choosing a dominant project objective which is achievable as well as ambitious enough to bring about progress and change, represents a considerable challenge for project designers. Project design should also take into account what has been learned concerning the management of change in education and the characteristics of the various phases of the educational change process.

The Merits of Simplicity

2.2 Overly ambitious project designs—manifested by multiple project objectives, excessive requirements of human and financial resources, and unrealistically optimistic implementation schedules—are at the root of many of the management problems experienced in the sector. Many Bank-financed education projects appraised in the late 1960s and early 1970s have suffered from problems stemming from a multiplicity of project objectives. This type of project has become known as a "Christmas tree project." It typically aimed at addressing a large variety of system needs through a number of relatively small investments. To manage such a project, the attention of the project managers had to shift continuously from one project objective or element to another; in fact, the construction of buildings and the procurement of equipment absorbed much of their attention, and also faced with having to tackle several educational issues at the same time, most of the project managers did not even try to do so. There is a clear consensus in the literature (Drucker, 1981; Paul, 1982; Johnston and Clark, 1982), as well as considerable Bank experience in the education sector, indicating that ensuring simplicity in project design by choosing a dominant project objective is an essential first step towards successful project implementation. Such an objective should be clearly defined and be operationally meaningful, i.e., progress towards it should
be measurable. While in practice it is not always possible to limit projects to one objective, narrowing the project focus facilitates implementation considerably.

**Aiming for More Than What Is Known to Work**

2.3 As in other sectors, educational planners and project designers have a tendency to take what is desirable for what is feasible. Sack (1981) reports on a review of the educational plans of developing countries and comments at length on the lack of concern with implementation or feasibility. Johnston and Clark (1982) make similar observations concerning rural development projects, and comment that taking what is desirable for what is feasible is "... primarily a pitfall of self-delusion—of wishing that the world is simpler than it really is." Political rhetoric and assurance of good intentions often reflect an inability or unwillingness to define clear priorities. When as a result of such lack of priorities scarce resources are directed towards unattainable goals, project management becomes an exercise in futility. This danger is especially acute in developing countries whose capacity for project implementation and management in education is severely constrained because of shortages of experienced staff and shortages of budgeting resources, but whose educational needs and ambitions are at the same time enormous. Furthermore, the severity of these constraints is frequently compounded by a political need for quick results. Successful project design requires setting priorities which strike a balance between the available means and the needs of the system.

2.4 **Means.** The paucity of experienced managers is probably the single most important constraint to educational development in developing countries. The education sector is not a "glamor" sector that easily attracts staff, and there is little effort to develop managers. Nearly everyone working in the sector is or has been a teacher. Administrators are nearly always former teachers who have been promoted to administrative positions without any training in management or administration. Inexperienced staff are frequently put in charge of large and complex projects. As a result, implementation delays accumulate and in many countries the Ministry of Education is notorious for its inability to absorb available donor credits or grants.

2.5 Project designers and political leaders are nearly always incurable optimists with respect to the recurrent budgetary support (typically underestimated) required by a project once it is fully operational, as well as with respect to the future availability of budgetary resources (typically overestimated). Also, project initiators and planners tend to overestimate the priority that will be attached to the project three to five years later when new issues and needs have arisen. This discrepancy between resources and ambitious goals becomes apparent in situations of financial constraints, when the government is unable to make available the necessary investment and operating funds, resulting in lengthy implementation delays and cost overruns. To deal with these cost overruns, technical assistance and fellowship programs are cut back at the expense of the projects' educational change objectives.
2.6 Overly optimistic implementation schedules are another manifestation of the difficulty project designers experience in balancing desirability and feasibility. Project managers, on the other hand, have often experienced the truth of Harrari's law: "No matter how long you think it will take, it will take twice as long." Nearly all implementation schedules contain strong elements of targeting and do not take into account that, in reality, anything that can go wrong will go wrong (Mu.'phy's law). Delays in implementation often start a vicious circle of cost overruns, which external donors do not like to finance, leading in turn to delays in obtaining additional funding, further cost overruns, and more delays while negotiations to reduce the scope of the project proceed.

2.7 System needs. The preceding discussion of the need to bring ambitious goals in line with available resources is not intended to lead to a conclusion that project objectives should be limited to supporting what is known to work and to be feasible. On the contrary, innovation and change are at the heart of the development process, and obviously no development is possible without taking risks. Doing only what demonstrably works has a negative effect on experimentation with solutions that are educationally or economically more attractive. For example, the present emphasis in Bank-financed education projects on the provision of textbooks is certainly justified. There is, however, a danger that once something which appears to work well has been discovered, other potentially high(er) yielding technological packages (e.g., teacher training and radio or peer instruction) may be neglected. Another example of overemphasis on doing what is known to work are the recurring proposals for "turnkey" prefabrication of schools. Prefabrication is obviously an "easy solution" for the complex problem of constructing large numbers of primary schools in rural areas. Adoption of this capital-intensive solution which works is frequently expensive and technically sub-optimal. It also may adversely affect the search for alternatives that are labor-intensive, make use of local materials, and are adapted to local conditions. Experimentation is especially important in the education sector, since much of the technology remains tentative and needs to be tested in and adapted to different local settings.

Managing Educational Change

2.8 A good balance between means and ends is a prerequisite for successful project implementation. The infrastructure "blueprint" approach (Sweet and Weisel, 1979) inevitably favors known solutions and establishes the preeminence of means over ends. A different approach to implementation, catering especially to the requirements of programs and projects (or project elements) aiming at change and innovation, has been emerging in recent years. Wildavsky and Majone (1979) call this "implementation as evolution," Johnston and Clark (1982), the "act-out" approach; it is also known as implementation by "muddling through" (Lindblom, 1959). These approaches de-emphasize comprehensive planning, seek to adjust to present difficulties rather than anticipate future ones, and try to achieve progress through gradual improvements and learning-by-doing. Instead of producing a blueprint of future events, these authors recommend a much more tentative approach. Project design and project management become virtually indistinguishable and progress is made
incrementally by learning from past experience (instead of repeating past mistakes) and from ongoing implementation experience.

**Phases of Educational Change**

2.9 A project aims at the implementation of a set of changes bounded by common objectives. It is a temporary system (Miles, 1964), which will come to an end once the improvements sought have been put in place, usually after four to six years. Projects frequently support a "slice" of an education program, which is much broader and lasts longer. Korten (1979) distinguishes three phases of implementation of rural development programs. He sees implementation as a phased learning process in which implementors first need to learn how to be effective, then how to be efficient, and finally, how to expand the program. A similar phasing applies to educational change programs. Many of these programs have important elements of "solution development," rather than "solution delivery," and typically pass through an experimentation phase, followed by a demonstration and a generalization phase. Each of these phases has its own emphasis in respect of management and organization.

2.10 The objective of the experimental or pilot phase is to develop technical packages that are demonstrably effective. In the education sector there has never been a shortage of ideas on how to improve student performance; few of these ideas, however, have been carefully tested and adapted to local conditions. Experimental or pilot projects set out to do this. Typically, they are small-scale, high-risk ventures that aim to try out solutions to problems or compare the impact of alternative solutions, and require considerable professional and conceptual inputs. Furthermore, the usual detailed type of scheduling and planning is most of the time not possible. Solutions must be sought and tested incrementally and changes made as one goes along. Effective management of these experimental projects often requires flexibility of resource allocation, a minimum of bureaucratic control, and specially assigned staff.

2.11 In the demonstration phase projects focus on demonstrating that a new educational development program is economically and/or educationally more efficient than the existing program. The emphasis is on adapting the program to local conditions and trying out methods to reduce the cost per pupil. The program will almost always need to be redesigned in light of the experience gained. At the same time, the scale of the project will need to be gradually increased, because many problems do not become apparent until the stage of full-scale application. Logistics and support mechanisms also need to be tested and the management organization geared to integrate the delivery of physical and educational inputs. Finally, a demonstration project needs to include planning for the transition to large-scale application and its institutionalization as a normal government operation, i.e., for its disappearance as a project (Yin, 1979).

2.12 The final phase in an educational change project is its full-scale nationwide application. Here the main challenges are in the areas of organizational and administrative capabilities. Logistical

2/ Rondinelli (1979) makes a similar distinction.
problems are often paramount during this phase (Havelock and Huberman, 1977) and careful planning of the delivery of physical inputs becomes increasingly important at this stage. Furthermore, moving the program outside the circle of initial implementers means that special attention will need to be paid to promoting motivation and commitment among local staff, especially teachers and school principals. Assistance and performance monitoring should go hand in hand. Implementation should continue to adapt to the evolving situation. Considerable latitude and flexibility was allowed in allocating resources. In a number of Bank-financed education projects, this is already happening and some project performance audits have commented favorably when the Bank's responded flexibly to changing conditions.

2.13 Project designers need to accept the fact that they do not have perfect foresight, and during project preparation, attention needs to be given to the development of mechanisms for implementation problem solving, and a more selective approach developed in respect of the preparation of detailed plans for input delivery. Innovative programs typically surpass the scope of one project and are often supported through a series of projects. Each project can cover one or more phases of the change process. The proper organizational form for each project depends, of course, on many factors, such as the type of innovation, the implementation strategy, the capacity of the existing organization and the phase the change program is in. Each organizational arrangement will have advantages and disadvantages in any particular setting. What is important is that the organizational arrangements are tried out during the demonstration phase. Building organizational strength early is an essential step towards eventual implementation success and the institutionalization of the project.

III. PLANNING IMPLEMENTATION

3.1 Good project planning and project preparation is the key to good implementation. In past World Bank education projects the planning effort has been largely concerned with organizing for the acquisition and the timely delivery of inputs. Issues of program adoption and demand mobilization have frequently been neglected and, as a result, educational change has suffered. Implementation of projects with a heavy educational change content should be planned as a progressive learning experience. The strategy for delivering the program and the structure of decisionmaking will depend on the program's size and scope. In designing the management arrangements, considerable attention needs to be paid to mechanisms for dealing with uncertainty, mobilizing beneficiary demand, and promoting and maintaining commitment.

Beyond Physical Implementation

3.2 Implementation refers to the process of assembling numerous program elements and resources and converting these into a product or a service to be delivered to a beneficiary. Implementation has frequently been the nemesis of project designers. Good implementation is, however,
the first step towards successful dialogue on sectoral policy issues. Often policy advice has faltered on the rocks of implementation:

"... unless we can learn better how to do, we cannot benefit from knowing how to plan; unless we can implement what we design, we cannot have reasonable confidence in public policies." (Honadle, 1979).

3.3 In the education sector, implementation has always had considerable hardware (buildings and equipment) connotations. Implementation referred to physical implementation, and in many cases implementation problems were thought of as procurement problems. Project implementation agencies have been dominated by architects, engineers and procurement specialists; organizationally, they have been associated with school construction directorates or Public Works Departments. In the Bank also, planning for implementation has, to a large extent, been left to architects, who, armed with implementation schedules and PERT charts, spent considerable time and effort in planning the timely delivery of inputs. Appraisal missions spend vast amounts of time to produce the exact cost figure and focus on the relatively easy physical matters first, while considering the unquantifiable essentials (often institutional issues) only in passing and at the last minute.

3.4 This "hardware" view of implementation cannot be adequate for educational change projects, which typically have important behavioral change objectives, aimed at teachers or students. First, many aspects of the change process are essentially unpredictable, especially since the behavioral change sought is long term in its effects and difficult to measure with precision. Second, while the symptoms of education problems are relatively easy to observe the causes are not always clear and the solutions tentative and different in specific settings. Furthermore, the extreme geographic dispersion of the education system in countries where communications are difficult, makes local adaptation desirable as well as inevitable. Finally, the preparation of comprehensive detailed plans for input delivery, often prepared at considerable cost, builds a rigidity into the implementation process and tends to ignore opportunities for learning by doing.

3.5 There are thus obvious limitations to the extent that meaningful project planning and preparation of educational change is feasible. In their book on rural development projects, Johnston and Clark (1982) observe:

"Comprehensive planning is, in fact, a classic example of those arguably desirable but wholly unfeasible goals so common in the development debate."

But even for infrastructure projects "the fanatic confidence in detailing" (Lichtenberg 1985) is being questioned and planning approaches, focusing explicitly and up front on nonquantifiable essentials, using global estimates and rounded figures, are gaining prominence. Project planning for educational change should learn from this trend in other sectors and give priority to the design of broad implementation strategies, which would provide the framework within which operational decisions are necessary to achieve the project goals can be taken.
3.6 The education sector needs to take a broad view of implementation going much beyond the traditional hardware approach of many projects. Priority should be on the achievement of educational outcomes rather than on the procurement of inputs, and on the organizational arrangements required for implementation as defined in this broad sense. Management arrangements need to be geared to learning from experience as implementation proceeds. In fact, design and implementation are very closely linked. Project planning and preparation continue during implementation. Integration of both functions is characteristic of successful and forward-looking project management.

Delivering the Program

3.7 The nature of an innovation or change program, supported by a project, determines to a large extent the design of the implementation strategy. Two dimensions are of particular importance in this respect:

(a) The size of the change, i.e., the extent of the planned deviation from routine classroom procedures and teaching practices.

(b) The scale of change, i.e., the number of schools affected by the innovation.

Size and scope can be grouped into four different combinations, as illustrated in Figure 2 below.

**Figure 2: Types of Change**

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<th>Size</th>
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<th>Low</th>
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<tr>
<td>Scale</td>
<td>large</td>
<td>small</td>
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<tr>
<td>Introduce mastery learning nationwide</td>
<td>Supply textbooks to all schools</td>
<td></td>
</tr>
<tr>
<td>Try out new math curriculum in a few schools</td>
<td>Rehabilitate workshops in a vocational training center</td>
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The high/low and large/small distinctions represent, of course, no clear-cut categories, but a continuum along which different projects can be placed. A national school radio project complementing the existing

3/ There is considerable confusion on terminology in the educational change literature. I have tried to follow van Velzen et al (1985) in this respect.
curriculum, for example, would probably be somewhere in the middle of the "size" continuum in the large scale range.

3.8 The implementation strategy and the project management organization will be very much governed by the type of project:

(a) Low size/small scale. This is the type of project that aims at upgrading or establishing a few institutions. The technology will be relatively well known and the predictability of the change process relatively high. The principal implementation issues on which management will have to focus relate to resource acquisition, especially procurement and logistics. This type of project can be implemented even when there are considerable constraints on the implementation capacity, since the managerial requirements are limited.

(b) Low size/large scale. This type of project tries to implement a relatively simple and known innovation nationwide or at least in a large number of schools. In addition to problems of resource acquisition, project management now has to cope with the difficulty of delivering inputs to a large number of geographically dispersed units. The logistics of this kind of operation are often formidable. Long distances, poor roads, unreliable communications systems, and a harsh climate frequently combine to make the transportation of materials a long and arduous process. Practically all case studies of innovations in developing countries report problems of this type. Every project manager has to solve these problems in relation to his particular project and the characteristics of the environment. A few general observations may, however, provide some guidance. First, it is important to try to limit transportation requirements as much as possible. Programs relying on a regular supply of materials that need to be transported over long distances may not be feasible and may need redesigning to maximize the use of locally available materials. Second, national application or generalization is also a learning process. Projects will have to learn how to deliver the program efficiently, often building up a communications network and infrastructure incrementally. Third, to be able to be efficient project managers need considerable flexibility and latitude in the management of discrepancy, financial resources, so that they are able to react expeditiously to emergencies and other unforeseen events.

(c) High size/small scale. This is the case of a pilot or a demonstration project where a substantive change is tested. This type of project does not pose the kind of logistical challenges to project management that the large scale projects do. Management problems in these projects deal with marshalling and motivating intellectual resources and with learning to accept and learn from failures while maintaining commitment and support. The financial resources required for this type of project are often limited, but the projects should be designed to give the
project managers maximum flexibility in making resource allocation decisions. Demonstration projects are also important as a training ground for the middle-level management staff that will be needed when the program moves into the generalization phase. Motivating professional staff and local implementers and setting up mechanisms for monitoring and evaluation, rather than running a highly structured input procurement and delivery system, are the principal tasks of the manager of this type of project.

(d) High size/large scale. This is the kind of project that corresponds best to the ambitions of governments of developing countries pushed by their considerable system needs and political urgencies. It is also the type of project that has a high and expensive casualty rate. Many developing countries have tried their hand at implementing ambitious, large-scale reforms, but only a few have succeeded. Governments that have tried to implement such reforms by administrative fiat have found that administrative decisions are not necessarily followed by implementation. Faced with the need to bring together a large variety of resources and deliver them in a large number of dispersed school sites, project designers have reacted by producing ever more detailed "blueprints" for implementation (working papers). Very rapidly these are bypassed by events, as coordination problems and difficulty in finding qualified local staff (Havelock and Huberman, 1977) cause delays and cost overruns. The response to such implementation problems cannot be to abandon the attempt to bring about substantive change, since the system needs are obvious and urgent. Instead, it calls for taking into account the constraints of implementation and, with a much longer time perspective, pursue a strategy which combines sequential diversification (Paul, 1982) and learning by doing. This means that a project should start out with a relatively modest dominant objective, and management should learn to implement it effectively before expanding the project geographically or towards increasingly ambitious change objectives.

3.9 Rarely can large-scale change programs be implemented in the limited time allowed for one project. Not much systematically compiled evidence is available about the time required for the full implementation of large-scale reforms in developing countries, but 10 to 15 years seems a reasonable estimate. Governments and donor agencies should be very much aware of the implementation time perspective, lest they become discouraged and give up the change effort prematurely. Patience and perseverance are essential for successful implementation of educational change projects.

4/ In the United States, Mort and Cornell reported in 1941 that it took 15 years before innovations were installed in 3% of the schools and 50 years until full diffusion. More recent data suggest an acceleration. Miles (1984) mentions 2-3 years for the implementation of a well-tested innovation in one school district.
Organizing Decisionmaking

3.10 The geographical dispersion of schools and the organizational tradition of teacher/classroom independence give education all the characteristics of a decentralized enterprise. Nevertheless, in most developing countries the management of education is set up as a highly centralized operation in which most decisions are taken in the center. This organizational image is propagated by the organization charts and codified procedures issued by the Ministry of Education but rarely reflects actual practice. In most countries, links between the Ministry and the schools are very limited and the only contacts are sporadic visits by inspectors and delivery of the teacher's paycheck. Under these circumstances, the ability of central authorities to affect what goes on in the schools is extremely limited, and change strategies based on compliance with bureaucratic directives will fail most of the time. The only alternative seems to be to try to build up local institutions and decentralize educational program delivery as much as possible. In a number of countries, the need for decentralization is becoming received wisdom. Responsibility for program management is increasingly delegated to provincial or local agencies. However, often nothing comes of these decentralization policies because many Ministries of Education are even more reluctant to transfer resources than they are to delegate responsibility. And responsibility without resources is meaningless.

3.11 Paul (1982) has pointed out that centralization and decentralization should be viewed in relation to different management functions and that a different degree of decentralization may be appropriate for each function. In fact, the strategy for demand mobilization and service delivery, the need for participation of the local implementers (e.g., teachers and school principals) and the beneficiaries (parents, students, employers) will, in conjunction with the existing administrative structure, determine to what extent management functions and decisionmaking authority can be delegated and to what level. Furthermore, the characteristics of a project, especially its size and scope, will affect the degree of decentralization that is possible.

3.12 Following the centralizing tendencies in education management, most educational development projects have been organized for centrally controlled program delivery. Such an implementation strategy typically overestimates the ability of the center to control implementation and neglects the need for local adaptation. A good rule of thumb in this respect is to decentralize whenever possible and to do at the center only those things that cannot be done effectively at other levels. For example, bulk procurement of goods and management of technologically complex operations should be undertaken at the central level where advantage can be taken of economies of scale and where technical and professional skills can be concentrated. Also, setting the general direction of educational change, nurturing national commitment, monitoring resource flows, and

5/ Per Dalin called my attention to this situation. It is confirmed by the experience both of us have had with school systems in developing countries.
coordinating with other national agencies are important central-level responsibilities. Decisions on strategic and organizational matters should largely be centralized. Activities that require a lot of local-level input, such as demand mobilization, support to schools, detailed planning, and program delivery at the local level and coordination with local (district) agencies (see para. 5.5) are the ones that have to be decentralized.

3.13 Organization of the decisionmaking process should be dynamic and evolve as the program develops. Pilot and demonstration projects will frequently need a strong central organization, but as the emphasis shifts to generalization, supervisory and support inputs per unit of output will diminish (learning to be efficient, para. 2.9) and local organizations will increasingly assume responsibility for a broad range of implementation tasks.

Dealing with Uncertainty

3.14 The discrepancy between plans and their realization is one of the most consistent findings of project case studies in developing countries, although by no means limited to those countries (Pressman and Wildawsky, 1973). Bank experience in the education sector has often been similar, partly because the specific implementation requirements of educational change elements in projects have not been dealt with adequately. Successful educational change often depends more on building capacity at the school level and adapting the program to local conditions than on delivering known solutions. Consequently, the predictability of the implementation process is low, especially for projects with a high size of change (para. 3.7). This fact has usually been ignored in the design of project management organizations, and as a result few projects are equipped to deal systematically with uncertainty. Anticipating the amount of uncertainty that needs to be dealt with during implementation and designing management arrangements accordingly is a crucial element of project design. For example, management organizations for projects aiming at the implementation of a known and tested program need not be designed to chart a new course. They should focus instead on delivering this program to the participating schools and on doing this with increasing efficiency. On the other hand, when the solutions are unknown or untested, project management arrangements should be designed for learning-by-doing.

3.15 Typically and perhaps inevitably, education projects in developing countries have ambitious objectives in terms of size and scope. Such large-scale operations generally have a low degree of predictability, in developed countries (Van den Berg and Vandenberghe, 1980) as well as in developing countries (Adams and Chen, 1981). Managing such a process requires, first, recognizing the limitations on the ability to anticipate the future, and second, organizing management as a learning experience. While straightforward solutions can be developed to tackle well-structured problems, this is frequently not feasible in education where the problems often are unstructured and continuously changing. Furthermore, knowledge of what is going on in schools, in terms of educational methods, content and results, is often limited, as is the understanding of the de facto functioning of the administrative machinery. Therefore, education project
management organization will be obliged to learn from experience as implementation proceeds and will need to have two essential features: a good monitoring system, and the flexibility to take remedial action.

3.16 Most development projects assisted by international aid agencies include a provision for evaluation. Much of this evaluation is summative and is important for learning from past experience. It has, however, only limited use as a tool for project management, because the data do not become available until long after project completion, and do not help to improve implementation. From an implementation perspective, what is needed is a management information system that provides rapid feedback on key program elements. Time is of the essence for project managers, and receiving implementation feedback rapidly is much more important than scientific rigor or comprehensiveness. Especially important is the analysis of causal factors, explaining the reason for a particular level of innovation adoption by monitoring the reaction of teachers and students and the rate and level of adoption of the innovation, because this provides the basis for corrective active action by management. To obtain a good understanding of probable causality, classroom observations and qualitative data should complement quantitative indicators. Qualitative data especially should be collected systematically, but selectively, so that data overload is avoided and the data are comparable and can be analyzed easily. To enable a monitoring system to provide rapid feedback, it should be kept simple and focus on only a few key program variables. The selection of these variables is an important and difficult task of project designers and managers.

3.17 To be able to take corrective action, project managers need budgetary and organizational flexibility. Corrective action will result in a modification of the input mix (e.g., provide more or different teacher training), a change in the time perspective (take longer to implement the innovation) or abandonment of the innovation in part or in whole. However, national financial regulations, as well as procedures for accounting and procurement imposed by international aid agencies, often effectively preclude the possibility of immediate corrective action. Ex-ante expenditure controls, combined with lengthy approval procedures, frequently make a rapid response to changing circumstances practically impossible. This hampers the implementation of projects aiming at educational change, as they often require substantial contingency funds to be deployed as implementation progresses and on short notice. Perhaps even more constraining than these financial rigidities are the organizational constraints, especially when they relate to staff. The hiring of new staff, or the geographic or organizational redeployment of new staff, is usually an arduous process. Delegation of decisionmaking authority and transfer of budgetary resources to district level staff are often very difficult to realize under existing regulations. Considerable attention should be given at the project design stage to budgetary and organizational rigidities that may interfere with the needs of educational change management. Some sort of controls are obviously necessary; but only in relatively few cases need they be ex-ante. Many can become ex-post, provided proper auditing procedures are established. Administrative procedures should, if necessary, be revised to allow for flexibility in taking corrective action.
Mobilizing Demand

3.18 S. Paul (1982) has emphasized the importance of demand mobilization as a key factor in the successful implementation of the development projects that he reviewed. Middleton (1985), in his review of education projects, also stresses this point. Many education programs have been designed by ministry bureaucrats, university professors or external consultants on the basis of universal hypotheses of what they think teachers, parents or students need, which is not necessarily what they want. Demand identification and mobilization is therefore a crucial issue that often is neglected in project design and most of the time escapes the attention of project managers. Depending on the type of program, demand mobilization should focus on the potential beneficiaries (students, employers) or the local implementers (teachers).

3.19 There are many examples of education projects which ran into difficulties because of insufficient beneficiary demand for the program to be implemented. For economic, cultural or religious reasons, parents have often been reluctant to send their children to school. Nonformal education projects are usually unfamiliar to the intended audience and the benefits are not obvious. Employers are often extremely skeptical about the ability of formal technical education or vocational training institutions to deliver practical training of good quality. Secondary school students have often balked at entering programs offering them practical skills in agricultural or industrial arts. Secondary technical schools are often students' last choice.

3.20 Demand mobilization does not, however, stop with convincing the ultimate beneficiaries--the students--of the benefits of the new program proposed by the project. The teachers also need to be convinced of the feasibility and usefulness of the proposed innovation. Teachers in developing countries have been exposed to many innovations and reform proposals and have developed an often well-justified skepticism as to whether an innovation will work as promised. Especially when an innovation implies considerable deviation from existing classroom practices and a lot of extra (unpaid) work for the teachers, implementation often fails at the classroom level (Sarason, 1972; Fullan, 1982). Such problems are especially acute in developing countries, where teachers are often poorly qualified, underpaid, and demoralized.

3.21 Management's response to weak demand will depend on its underlying causes and the type of program involved. If a free standardized program is involved--e.g., primary education, secondary technical/vocational education or introduction of practical subjects--the management task is one of dissemination of information and advice to the beneficiaries--the students and parents. It may be necessary to involve local community and political leaders in this process. The results of such efforts will, most of the time, depend upon the ability to demonstrate and clearly articulate the benefits of the program. Where ability to meet the cost (actual or opportunity) is a constraint, it may not be feasible to implement the program in the short term without special incentives (e.g., school lunches) or subsidies. Mobilizing demand among teachers and local administrators calls for an approach which, in addition to disseminating...
information and advice, provides for participation. Participation improves the fit of an innovation program with local conditions and needs, and also can have a very positive effect on the motivation of teachers and administrators.

3.22 In many projects, demand mobilization issues affect implementation and it is important to focus, during project design and during the early implementation stages, on assessing the intensity of the demand, the underlying causes of a weak demand, and the appropriate strategies for demand mobilization. Analyzing the structure of the demand for education programs and designing strategies for influencing it is not easy. Often the only way to get a feel for it is to go out and implement the program. Under such circumstances, it is essential to make ample provisions for learning by doing and for redesigning when necessary the project and trying again.

Promoting and Sustaining Commitment

3.23 In a short time it has become received wisdom that government commitment is a condition sine qua non for successful project implementation. This point has been belabored in several reviews and audit reports of completed Bank-financed projects, but its operational implications have seldom been analyzed. "Government commitment" is a rather undefined concept. To come to grips with its operational meaning and its implications for project management, it is necessary to delineate the concept and review its observable manifestations.

3.24 "Government commitment" refers to the priority a government attaches to a project and the sustained support it provides for implementation. This support manifests itself at different levels and in various forms. At the political level there are natural peaks in the support for a project at the initial stages (tackling issues neglected by a previous administration or successfully negotiating external assistance) and when results become visible (taking credit for the project's achievement). During implementation, the level of interest tends to decline as other urgencies arise before project results become visible. As political support is usually focused on the short term and on visible change, a determined effort will have to be made to sustain it. At the administrative level, commitment is more difficult to generate but once it is there it tends to be somewhat less volatile than political commitment. Administrative support follows, to some extent, political commitment. There are, however, time-lags and subtle and not so subtle ways by which administrators can help or obstruct project implementation. Usually, a large number of administrators is involved in the project either directly or indirectly. Coordination and integration of inputs from different agencies will be possible over an extended period only if broad administrative support exists. At the local level, commitment among the project implementers (teachers, teacher trainers, school principals and inspectors) will be needed. The ability of administrators to directly affect what happens at the school level is often quite limited (para. 3.9). However, without local administrative support, the project is unlikely to achieve substantive educational change objectives. Project managers and educational administrators have a key role to play in building and maintaining local-level support.
3.25 The key test of political and administrative commitment is the provision of resources for the project. Resource allocation decisions frequently reflect the actual priorities, which may deviate substantially from official pronouncements. Other tests include the willingness of political leaders and top-level administrators to make bureaucratic and procedural exceptions to accommodate the specific needs of the project. Finally, a public relations effort by the government may also be a demonstration of continued support. At the local level, support manifests itself in the willingness of teachers and school principals to make an effort to apply the innovation in the classrooms.

3.26 Project managers will, in most cases, have to make an explicit effort to promote and sustain commitment. Undoubtedly the surest way to do this is through successful project implementation. Success breeds commitment. In case studies of project failure, it often is not clear in what sequence a lack of commitment and implementation failure occurred; they are likely to be mutually reinforcing in moving a project towards either failure or success. An incremental approach in implementing educational change programs, thereby building on a series of achievements, may be one way to demonstrate success in the short term and thus promote and sustain commitment. Another implication of the need for commitment building and sustaining is related to the communication of information. In designing a project monitoring system, attention should be paid to the information required by the political leaders and top-level administrators (Sack, 1984). One cannot expect them to continue their support for a project without receiving regular updates on its progress and achievement. Finally, promotion and sustaining of commitment among the local implementers requires special attention. Implementation typically requires, especially in the early stages, considerable time and effort from them. There should be incentives and rewards in terms of professional recognition and career opportunities for teachers and local administrative staff. Some creativity on the part of project managers in this respect is likely to pay off handsomely.

IV. MANAGING THE PROJECT

4.1 Project management functions follow directly from the implementation strategy. To some extent, all functions will have to be taken care of in each project, but the emphasis will vary. This chapter discusses the implications of learning-oriented educational change strategies on the traditional project management functions of planning, direction, coordination, communication and control.

Planning to Adapt

4.2 Failure to plan adequately—i.e., to assess the future implications of decisions that need to be taken—is probably one of the most glaring weaknesses of project management in developing countries. Planning should be action oriented; as such, it differs from forecasting, which is essentially the projection into the future of past trends. There are two distinct types of planning that the project manager needs to focus on: operational planning, and strategic planning (Paul, 1982).
4.3 **Operational planning** deals with well-structured activities with clear objectives that can be accomplished in a relatively short time, such as building and equipping a school, distributing textbooks, etc. The process and the potential pitfalls will generally be well known and predictable. Decisionmaking and scheduling will focus on the details of procurement of goods and delivery of services, and on the allocation of the necessary financial and human resources. The fact that these processes are relatively straightforward does not mean that operational problems should be taken lightly. Havelock and Huberman (1977) and Middleton (1985) found that problems of logistics and resources acquisition were reported as the principal source of delays in project implementation. Obviously, effective logistics are a crucial and necessary condition for project success. The best way to avoid operational problems is to make sure that there are trained staff to plan and monitor operations. The time perspective for operational planning will vary, depending on the program, but in general a time horizon of two or three years seems to be the maximum that is meaningful. Operational planning for the very short term (say, six months) should be very detailed and precise. Precision and detail will decrease as the time horizon gets longer.

4.4 **Strategic planning** focuses on the decisions that need to be taken in respect of the project's broad objectives and implementation strategy. As pointed out in para. 3.14, educational change projects often have relatively unstructured objectives, aim at behavioral change, apply technological packages that are tentative in the local setting, have results that are never finite and become visible and measurable only after a long gestation period. The "blueprint" approach that, if applied with reason, works well for operational planning is much less successful in strategic planning. Learning from experience, planning for systematic implementation feedback, and adaptation on the basis of this feedback are essential for good strategic planning. The key element of such a learning approach to planning is an effective monitoring and evaluation system (para. 3.15 and 3.16). Evaluation is needed to learn from past mistakes, and monitoring is needed to learn from ongoing experience.

**Leading Towards Learning**

4.5 The project manager's responsibility is to produce results, i.e., to implement the project efficiently. The statement that effective project implementation depends on good leadership is neither a new nor a very operationally helpful insight. Education rarely attracts the top management talent in a country (para. 2.4) and complaints about the competence of project managers rarely solve anything. The issue that needs to be addressed is under what conditions a project manager of average ability can be expected to perform effectively. Project evidence suggest there are at least four. First, project design should take into account the level of managerial competence that prevails in the country. Second, objectives and performance standards should be well defined to help the project manager measure progress. Third, the average project manager will be greatly helped by equitable and stable personnel policies pertaining to himself, his subordinates and his colleagues in other agencies. The adverse impact on project management of organizational turbulence and continuous staff changes is well known. Finally, well-trained,
operationally effective staff are as important to implementation success as an effective manager. Motivating project staff is therefore an essential aspect of a project manager's responsibilities. Incentive systems that provide financial, professional and career rewards should be given due attention in designing project management organizations. When civil service regulations are restrictive with respect to financial incentives, it may be necessary to provide more intangible rewards.

4.6 Managing educational change in a learning mode requires that project managers use approaches and skills which traditionally have not been emphasized. First, an authoritative management style is generally not conducive to learning; learning-by-doing requires information flows from the local level to the center. To promote such information flows, central staff should recognize that they do not have all the answers and should have an open mind and a non-directive attitude. Second, civil service bureaucracies have a tendency to focus on compliance with regulations. To move away from this concern for compliance—which in many cases is an illusion anyway (para. 3.9)—and instead give priority to providing supportive guidance to local implementers (e.g., district inspectorates or schools) is new and often difficult for the staff of a Ministry of Education. Third, learning to accept failure, as well as learning from failure without allocating blame or becoming defensive, is essential for successful learning-by-doing and very different from believing that one's plan is always right and that poor management caused the failure. Finally, the decentralization of responsibility and resources, participation in implementation planning, mobilization of demand, and promotion of commitment all require considerable human relations skills. Such a change in management style is not easy to bring about and requires a considerable behavioral change on the part of both the manager and his or her subordinates. A good example of the benefits, but also the problems, of implementing a change in management style has been documented by Peiris (1983) for Sri Lanka.

4.7 The quality of project management in the education sector has to be seen in relation to the available pool of managerial talent in the sector or even in the country. In the longer term, a pool of managerial talent in the sector should be consciously developed—as in any large-scale business—through the provision of career opportunities, diagnostic performance appraisals, and staff training programs. Few countries have begun seriously to tackle this job of developing sectoral management skills.

Communicating for Support

4.8 Communication is the linchpin of implementation strategies that give priority to demand mobilization, systematic commitment building, and participation of local implementers in decisionmaking. In education projects, communication between the center and the periphery—i.e., the project managers and participating institutions—has been limited and often a one-way process. Often it has been in the form of de facto events: land surveyors arrive to take a number of mysterious measurements, a contractor arrives at the school site to start digging and equipment arrives without anyone expecting it. Written or oral communication that does take place is
often in the forms of instructions or announcements. A learning mode of project management requires a two-way flow of information: information needs to be collected and passed up the organization, processed at the central level and then fed back to the local implementers in the form of a response to a question or a decision taken. In addition to these internal communication processes, there is an often neglected need to communicate with the potential supporters and resource providers outside the project.

4.9 Typically, communication in the education sector takes place at three levels. First, there are the teachers, who are the frontline implementers. They need to be trained in the use of new teaching methods, content and techniques, then apply what they have learned in the classroom. They report to the next organizational level (often their trainers/supervisors) on how an innovation is faring in the classroom, how the pupils react and what problems are being encountered, and they adapt and adjust the innovation to local conditions. The next level of the organization--district inspectors, pedagogical counselors, etc.--supervise, support and train the teachers and report to the center the implementation progress that occurs at the local level. Inspectors and counselors should be able to resolve the majority of implementation problems which teachers encounter. They should monitor classroom processes to make sure that the core of the innovation is not adapted away (Huberman and Miles 1984) and at the same time provide refresher and on-the-job training to the teachers to help them to increase gradually their ability to diagnose and resolve their own problems. Finally, the central-level staff play a similar role of providing training, support and supervision for the district-level staff, just as that staff did for the teachers. Open communication aimed at learning from experience, firmness in safeguarding the core of the innovation while leaving a leeway for local adaptations, and a willingness to help teachers to implement the innovation are the main ingredients for successful implementation of educational change.

4.10 Communication is important at all levels. Teachers need the support of parents and/or community leaders and to cater to their information needs and solicit their views. District officials may need to communicate with employers and with district-level staff of other agencies to ensure coordination of inputs. At the central level, promoting and sustaining commitment and support among political leaders, union leaders and top-level administrators in different ministries called for explicit project management attention. Without information and/or participation, the outsiders' interest in the project will rapidly decline.

4.11 Managing the logistics of communication is a formidable challenge. Meetings, report forms and circulars are among the most common communication devices used in project implementation, but are not always effective; meetings may be poorly attended and unproductive; forms, if used at all, may be poorly filled out and circulars ignored. These traditional devices should be used sparingly and kept as simple as possible. The information collection requirements put on teachers for monitoring purposes, for example, should be limited to the barest minimum; otherwise, the information will not be collected or may be faked. For larger-scale projects, a strong case can be made for complementing these traditional bureaucratic means of communication with special informational efforts.
through radio programs or newsletters. Putting the often isolated local implementers in contact with each other through such means may be a first step towards building peer support groups, which have been found to be positively related to the successful implementation of educational change (Bentzen, 1974). Johnston and Clark (1982) have pointed out the importance of the availability of transportation for communication in rural development organizations. The situation in the education sector is similar. Available research on the implementation of educational change (Crandall, 1982; Huberman and Miles, 1984) points up the crucial role of pedagogical support and supervision for effective implementation. Providing means of transportation to the district-level supervisors (bicycles, motorbikes, or travel allowances) is in many cases an investment with considerable return. Finally, it is worth noting that attention to public relations may be beneficial. Inviting the press (radio, TV, newspapers) to the opening of a new school, occasional press conferences and news releases may call attention to successes achieved in the education sector, and thus affect commitment, support and resource availability.

Coordinating Change Processes

4.12 "Lack of coordination" is one of those catch-all phrases frequently used to describe what is wrong with the implementation of education projects. "Improving coordination" is invariably recommended as a sure remedy for improving project implementation. Coordination refers most of the time to actions that different agencies need to take to achieve a project objective. Most of the time the term is used loosely without describing what exactly needs to be done. Chambers (1974) comments as follows:

"The word "co-ordination" provides a handy means for avoiding responsibility for clear proposals. It is perhaps for this reason that it is much favored by visiting missions who are able to conceal their ignorance of how an administrative system works or what might be done about it by identifying "a need for better coordination."

"... Moreover, by using "integrated" and "co-ordinate" more or less synonymously and in alternate sentences, long sections of prose can be given an appearance of saying something while in fact saying very little indeed." (p. 25)

4.13 Coordination deals with the relationship of an organization with its environment. Smith, Lethem and Thoolen (1980) have pointed out that project designers and project managers need to be concerned with three environments:

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Here the definitions environments, not levels differ somewhat from those used by Smith et al., because it seems important to realize that influencing the "appreciated" environment may be an important task for the project manager.
(a) the **controlled** environment: activities internal to the project organization, directly controlled by the project manager;

(b) the **influenceable** environment--entities external to the project organization which have a formal relationship with it;

(c) the **appreciated** environment--entities whose behavior has an impact on the project, but has no direct relationship with it.

The coordination issue applies primarily to organizations in the influenceable environment. There are essentially three types: organizations of beneficiaries (e.g., students, present employers), groups involved in actual program delivery (e.g., teachers, school principals, administrators and pedagogical support staff), and agencies concerned with the acquisition of inputs (e.g., supplies, tender board, Ministry of Finance, external donors). Traditionally, most of the coordination efforts in education projects have focused on coordination of the input acquisition process. Managers of projects with important educational change components will, in addition, have to coordinate with beneficiaries and groups involved in program delivery.

4.14 The coordination requirements are an important factor in assessing project feasibility (para. 2.3), especially since coordination has high costs in terms of staff time spent in meetings, interagency negotiations and paper work. Project designers should carefully assess the coordination requirements of a project carefully and try to limit them as much as possible. Again, it usually is not feasible to try to implement the ideal project, and in order to minimize coordination requirements it will often be necessary to set priorities and to implement relatively unconnected programs separately and connected ones sequentially. There will, however, in any education project always be a need to deal with the environment. Structures and procedures for dealing with the influenceable environment need to be designed (see Chapter V) and lines of communications with the appreciated environment to be kept open (para. 4.10).

**Controlling for Performance**

4.15 The tendency towards **ex-ante** control is a dominant characteristic of government bureaucracies in developing countries (and in some developed countries as well). It is justified as the only way that corruption and inefficient use of resources can be avoided, and reflects the hierarchical nature of bureaucratic control, which focuses on compliance with regulations and procedures, with a heavy emphasis on expenditure control. There are, in general, relatively few attempts to control performance. Consequently, local implementers tend to give priority to adherence to regulations rather than to effective performance. Establishing an effective mechanism for controlling performance is not an easy task; it requires clear, operationally defined performance objectives, as well as specific and explicit performance expectations and standards. Without standards, performance cannot be controlled and project designers should give priority to setting appropriate standards and clearly defined objectives at an early stage in the design process.
4.16 Effective management of educational change projects calls for a shift from *ex-ante* control and observance of procedures to *ex-post* control and monitoring of performance. This represents quite a change from usual bureaucratic behavior and can only be expected to take place gradually. It will require, first, that central-level staff begin to trust local implementers and agree with them on clearly defined performance goals that are periodically being reviewed and adjusted. While fears of abuse are real, there is no alternative to shifting resource control, once the decision has been made to place more responsibility on the shoulders of the local implementers. To be able to perform, they need to have access to resources. *Ex-post* expenditure control should be thorough and the penalties for abuse severe. Local implementers will also have to learn to handle this responsibility and to be creative and take initiatives. The function of central-level staff then moves away from ascertaining compliance with regulations to providing support (Elmore and McLaughlin, 1982).

V. ORGANIZING FOR PROJECT MANAGEMENT

5.1 In the preceding chapters, it is argued that educational change takes place under conditions of considerable uncertainty and cannot be precisely pre-planned. Learning-by-doing and reliance on local implementers are suggested as key elements of a strategy for implementing educational change. In Chapter IV we have seen how such a strategy affects some of the traditional key management functions. This chapter examines the implications of the strategy in the design of the management arrangements of educational change projects, looking specifically at the place of project management inside a government bureaucracy, institution-building issues, the organizational location of the project management organization, its relationship with other organizations in the influenceable environment, and its functioning as a learning organization.

Project Management Inside the Bureaucracy

5.2 Government bureaucracies, including Ministries of Education, are typically organized along functional lines. The weakness of the functional organization is the difficulty it has to coordinate the work of people from different functional areas towards the achievement of a common task. The project management organization which brings together people from different areas is the standard answer of bureaucracies to these problems of functional coordination. The following table lists, in a somewhat polarized way, the differences between the typical bureaucratic and the typical project organization.

A bureaucracy is an organization whose purpose is to perform an integrated number of simple repetitive tasks (Weber).
Figure 3: Comparison of Characteristics: A Bureaucratic and a Project Organization

<table>
<thead>
<tr>
<th>Organizational Characteristics</th>
<th>Bureaucracy</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>Permanent, Large functional hierarchy</td>
<td>Temporary, Small interacting team</td>
</tr>
<tr>
<td>Procedures</td>
<td>Impersonal, rigid emphasizing continuity, fairness, accuracy, control, and predictability, compliance-oriented</td>
<td>Personal, flexible, oriented towards problemsolving, unique situations, and mutual adjustment, performance-oriented</td>
</tr>
<tr>
<td>Decisionmaking</td>
<td>Top-down</td>
<td>Participative</td>
</tr>
<tr>
<td>Communication</td>
<td>erratic, top-down</td>
<td>Continuous, in all directions</td>
</tr>
<tr>
<td>Environmental relations</td>
<td>Assumed to be stable</td>
<td>Recognized to be complex and unstable.</td>
</tr>
</tbody>
</table>

5.3 Projects are set up to carry out non-repetitive tasks necessary to achieve a specific—often developmental—objective, calling upon a team of people from different functional areas. Successful project management has traditionally meant implementing the tasks determined during the preparation and appraisal stage, on time and within cost. Management problems are then deficiencies in the control and coordination of numerous interrelated tasks. With such an approach, project management can work quite separate from the functional agencies to whom the project's product or program will be handed over upon completion. In fact, the project manager does not need to worry about what happens to the project after completion and, by the same token, the functional agency need not be concerned with the course of events during implementation. While such an approach may be feasible, it is ineffective for managing educational change, when the solutions are known and the environment stable. For educational change projects, solutions are often not fully known and project implementation often involves a substantial amount of "solution development." To do this effectively, close relationships between functional managers and project managers are essential, so that adaptation of project objectives on the basis of feedback can take place expeditiously. The interaction between project managers and functional managers takes place at the following three levels:
(a) **Strategic.** At this level, strategic questions such as what are the project objectives, and what should they be, need to be decided. Also resource allocation decisions to back up the strategic decisions need to be made at this level. In education projects, it will typically be at the ministerial level that these types of decisions are made.

(b) **Organizational.** At this level, decisions need to be taken as to how project objectives are going to be achieved, and what kind of project organizations, what kind of control mechanisms and resource acquisition procedures are going to be set up. The project management unit will function at this level and ascertain horizontal and vertical coordination.

(c) **Operational.** This is the level of the local implementors, in most cases, the school with teachers and principal often supported by local inspectorate. They carry out the tasks necessary to achieve the project objectives. Their relationship with project management is often unclear, since local implementors report to the functional departments.

5.5 Designing and institutionalizing project management arrangements for educational change projects is particularly complex, because of the need for multiple and close relationships with functional departments in the ministry and the predominance of solution development in project implementation. Furthermore, the design of project management arrangements will have to go beyond the design of organizational structures for operational management. It will have to include the design of arrangements for horizontal and vertical coordination, communication, and collaboration. Issues of the organizational location and mechanisms of coordination dominate, therefore, organizational design, and need to be considered at the strategic, the organizational, and the operational level. Since local implementors are hierarchically part of functional departments, the satisfactory resolution of these issues is often the key to the design of effective implementation arrangements for "solution development," i.e., the creation of a learning organization. In the following sections, these issues will be further explored.

**Institutionalizing the Project Management Capacity**

5.6 Many education projects are managed by specially created units, usually called "Project Implementation Units"(PIUs). The relationship between the PIUs and the Government agency responsible for the project, most often the Ministry of Education, varies a great deal. Some have been set up as parallel agencies working outside the bureaucracy and others as
line agencies. The choice of a particular organizational arrangement has important institutional implications. The disadvantages of parallel units and stop-gap units are that they contribute little to the development of an institutional capacity for project management in line agencies. Since institutional development for project management has increasingly become an important education lending objective, the use of parallel units will be appropriate only in those cases where the institutional development objectives are secondary to the need to have the project implemented, either as a one-time effort or as a "turnkey" operation. In line with this increasing institutional emphasis, most PIUs have taken on broader responsibilities than the implementation of a single project and have moved in the direction of becoming a coordinating unit or the nucleus of a regular line agency subdivision in charge of implementing that agency's investment program.

5.7 Since most educational development in developing countries is project driven, building strong, permanent organizations for the implementation of educational change projects is an important institutional development objective. Every Ministry of Education needs to have the capacity to implement development projects and should organize itself to do this effectively. Implementing development projects is a permanent function of Ministries of Education in developing countries, but one that is different from the routine administrative tasks of typical line agencies (para. 5.2). Project managers need to be able to deal expeditiously with the unforeseen, and they need considerable authority to deal flexibly with the need to adapt implementation strategies and reallocate resources. Also, project management is a multifaceted complex activity, which requires specialized staff, drawn from a variety of functional agencies. The importance of project work and the scarcity of project management skills make in most countries the creation of a special organizational unit the best solution. Such organizations' main tasks will be implementation planning and monitoring, resource acquisition, communication, and coordination (para. 5.2). Its hierarchical status, autonomy and staffing should be decided, bearing in mind the special requirements of education project implementation. Specific structures will depend on national conditions. Planning for the development of an institutionalized capacity for project management should begin early in the project cycle. Arrangements for staffing and resource management should be clearly spelled out. Legal arrangements should be made as early as possible.

8/ A helpful distinction is between: (a) parallel units, set up to handle key aspects of project implementation, which the line agency is unable to handle efficiently; (b) stopgap units, set up to undertake one time activities; (c) interagency coordinating units, set up to link line agencies involved in the project; and (d) units set up as the nucleus of a new division within an existing line agency (IBRD--Institutional Development Technical Note No. 1).
5.8 Successful project implementation requires effective communication and coordination between the project and the functional department at the strategic, the organizational, and the operational level. If not handled effectively, a considerable potential for conflict, inherent in matrix organizations of this type can easily surface and adversely affect implementation. Coordination and decisionmaking need, therefore, to take place at the appropriate level. Strategic issues need to be dealt with at the senior levels of the Ministry involving several functional heads. Organizational issues are the responsibility of project management, but close collaboration with functional departments, sometimes involving the secondment of staff to the project, is essential. At the operational level, organizing for implementation will often involve elements of a matrix organization (Paul 1982). Although the disadvantages of the matrix organization, with its unclear lines of command, are well known, it is difficult to see how the efforts of teachers and local level administrators can be marshalled for project implementation without a collaborative effort of project and functional managers. Such collaboration can only be achieved, if functional and project organization both function well. While effective project management organization can complement functional departments, it can never replace it.

5.9 The permanent character and special needs of project management organizations advocated in this paper do not imply a permanent special status of development programs or projects. As "hard money" (national) replaces "soft (external) money" and the new practices introduced by the project become institutionalized (Berman and McLaughlin, 1978) and part of the classroom routine, the special status project disappears (Yin, 1979) and is incorporated in the normal routine procedures of administrative line agencies, emphasizing compliance with procedures rather than change.

Organizational Location

5.10 The organizational location of project management organizations has often reflected the traditional emphasis on hardware, with Ministries of Public Works and Directorates of School Construction hosting Education Project Implementation Units. This no doubt has positively affected physical implementation but at the same time it has reinforced the hardware orientation of many projects. Similarly, the staff of project management units is typically dominated by architects, accountants, and procurement specialists. Often the implementation of the educational elements of the project is separated from the mainstream of events and left to line agencies of the Ministry of Education. Such arrangements are obviously inadequate for the management of educational change projects. Education project management organizations should be under the strategic control of the program parent ministry, have educational objectives as the dominant ones, and include in its staff an adequate number of educators.

5.11 The effectiveness of project management is strongly influenced by its place in the hierarchy, the autonomy it enjoys and the access to strategic decisionmakers (Middleton 1985). To adequately deal with the
large number of organizations in influenceable environments, especially the functional departments in the ministry, the project management organization should be located at an appropriate hierarchical level. In many countries there is a strong sense of hierarchy in the civil service. Determining the appropriate hierarchical level is therefore important and involves an analysis of the key organizations in the influenceable environment with which the project manager will have to deal, and then locating the project organization at a comparable level. Access to strategic decisionmakers, which has found to be an important element of successful project management, also depend on the hierarchical position of the project manager.

5.12 In addition to its position in the hierarchy, the degree of autonomy of the project management organization is important for its effective operation. Autonomy refers to the leeway a project manager has to depart from the usual procedures and controls established by his parent Ministry. These procedures often emphasize fairness, predictability and compliance, and are ill-suited to deal with unique events, uncertain environments and unpredictable reactions. Ideally, top government officials should make only the strategic decisions and leave the other decisions to the project manager. In fact, the degree of autonomy will be determined to a large extent by the legal form of the organization. Most education projects have been managed by a Ministry, usually Education, although in a number of cases, semi-autonomous agencies such as universities or specially created agencies have managed in their areas of responsibility. The semiautonomous units have frequently performed quite well.

5.13 The main elements of autonomy concern financial decisionmaking and staffing. Semi-autonomous agencies usually will have some degree of financial autonomy, but ex-ante financial controls may still be stifling (para 4.15). Additional financial autonomy for government agencies can be created through the use of imprest accounts or revolving funds. Autonomy in respect of staffing decisions is more difficult to achieve in a civil service context, but some leeway is usually available for recruitment for temporary positions, secondments, and performance incentive schemes. The nature of the project and the amount of uncertainty will determine the degree of autonomy needed. The more uncertainty in implementation a program faces, the more autonomy is required (Paul, 1983).

Structuring Coordination

5.14 Designing an organizational structure for coordination of the activities of the organizations and the groups of people involved in the project requires that these organizations and groups and their relations be correctly identified. Relationships between organization are essentially determined by the resources and information that need to be exchanged (Klaus, 1979). The nature of the project determines the intensity of the information and resource exchange or sharing. The design of the coordinating mechanisms will follow from the particular combination of resource and information sharing required (see Figure 4 below).
Figure 4: Coordination Arrangements as a Function of Information and Resource Exchanges

<table>
<thead>
<tr>
<th>Resource Sharing</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Sharing</td>
<td>o Formalized coordinating structure with written interagency agreement</td>
<td>o Project/Matrix interorganizational design</td>
</tr>
<tr>
<td></td>
<td>o Lead agency model</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>o Ad hoc advisory committee</td>
<td>o Multiple limited scope contractual arrangements</td>
</tr>
<tr>
<td>Low</td>
<td>o Interagency task force</td>
<td>o Fixed amount, i.e. reimbursement agreements</td>
</tr>
<tr>
<td>High</td>
<td>o Policy advisory group</td>
<td></td>
</tr>
</tbody>
</table>

5.15 Four basic structures can be identified in Figure 4:

(a) **Low information/low resources.** These are arrangements aiming at some exchange of experience with agencies/groups involved in similar activities. An example is the exchange of information between groups of schools in different regions engaged in similar projects, or university staff without decisionmaking authority, reviewing implementation results and advising project management.

(b) **High information/low resources.** The main emphasis in this case is to exchange information through regular meetings and sharing of status reports. Resource sharing that occurs is on the basis of formal agreements, is marginal and mostly one-way towards the implementing agency. An example is the participation of agricultural extension workers in the teaching of agriculture in schools. The implementation of such arrangements requires close coordination and a formal agreement is useful, although special incentives and arrangements for information exchange are usually required to make such arrangements work.

(c) **High information/high resource sharing.** These are the types of coordinating arrangements required by projects that need to integrate the inputs of a large number of agencies. Many educational change projects fall into this category. There is often a considerable combining of resources at the implementing level, where construction of facilities, delivery of equipment and materials, support and training of teachers, new curricula, and monitoring and evaluation all come together. The activities of several directorates of the Ministry of Education, inspectors, researchers, teachers and parents, typically need to be coordinated, often through a variety of structures.
Communication may become time-consuming under such circumstances and the potential for conflict considerable. Effective decisionmaking will, in most cases, require that project management has considerable autonomy, and enforcement of decisions will be more problematic than in traditional hierarchical organizations.

(d) **Low information/high resource.** In most cases, information sharing will complement resource sharing. In a few cases where large lump-sum transfers are made on the basis of simple criteria, there may be an exception. For example, the provision of matching funds or disbursement on the basis of performance criteria may require only limited information exchange prior to the transfer of resources from, for example, the central government to the district education officer.

5.15 Coordination has a cost in terms of lost time, additional personnel and extra funds. The high/high variant is likely to involve the greatest expense and the greatest risk of failure. Also, it should be noted that the need for and type of coordination will change as project implementation evolves. Typically, arrangements will be more loosely defined in the early learning stages of a project, while later on decisionmaking structures are tightened to ascertain that all inputs are provided on time. Finally, the formal structural coordinating arrangements do not tell the whole story. Informal arrangements may be even more important in determining the success of coordination arrangements.

**The Learning Organization**

5.16 In the empirical analyses of project management organization in developing countries (Lele, 1975; Paul, 1982; Johnston and Clark, 1982) there is a virtual consensus that successful projects tend to have decisionmaking structures that are a mixture of authority and bargaining. Although much of this literature deals with rural development projects in developing countries, the parallels with educational change projects are many and the lessons for project management valuable. Moreover, studies of the implementation of education studies in the United States (Berman and McLaughlin, 1978; Crandall, 1982; Miles, 1984) come to similar conclusions. Successful operations appear to be those in which broad guidelines coming down from the top are subject to considerable filling in or adaptation after discussion, bargaining and compromise at the local level both before and during implementation. In this view, the national ministries design and promote programs which they want to see adopted. Local implementors react with ideas and proposals for adaptation and change which they consider desirable in the light of specific local conditions, existing classroom routines, and early implementation experience. The result is a project management system that is implementing a continuously evolving project which, especially during the early stages, requires considerable implementation assistance and supervision.
5.18 The structure of the internal project organization should reflect the implementation strategy. Frequently, it will need to be geared to learning from experience. Obviously, projects should be organized to efficiently execute the resource acquisition and delivery functions, but that is not enough, particularly not in the case of educational change projects. In order to develop into learning organizations, it is necessary to have simple, well-designed monitoring arrangements, an effective two-way communication throughout the organization, adequate organizational autonomy, and motivated staff, including education specialists. Searle (1985) cites a good example of a learning organization described in the Project Completion Report for the Philippines III textbook project:

"The learning gains by project institutions involved in textbook development were considerable. By 1981, the various Curriculum Development Centers (CDCs) had identifiable working groups counting specialists among them for research and writing. The Textbook Board and Secretariat (TBS) had evolved by then the basic publication criteria... The textbook development cycle had been tested... Responsibilities had been carefully delineated among authors, editors, copy editors, graphic artists and other production specialists. The project progressively produced books, each better than that preceding it: the first book produced by the project was a straightforward, single-color elementary science book with text and simple line drawings; the last was a complex high school teacher's edition, two-color text and full-color cover, featuring the textbook pages reproduced in facsimile and integrated with instructive material and photographs for the teacher's convenience."

5.19 In speculating why the TBS was such a successful learning organization, Searle lists the following:

- Adequate numbers of staff;
- A minimum level of managerial competence at the outset;
- The expectation that operating procedures would be codified, reviewed and changed as necessary;
- Flexibility with regard to procedures so that management could make the changes it considered necessary;
- Sufficient stability of staff so that individuals and the institution could both learn from experience; and
- Mechanisms (particularly training in-house or outside) to upgrade the staff's professional qualifications whenever the need for upgrading become apparent.

5.20 Establishing an effective project management organization which operates in a learning mode, as described throughout this paper, has to be an overriding institutional development objective in respect of project management. It should be dealt with systematically in the design of
projects and project management arrangements. While these arrangements will be specifically determined by the particular country conditions, national administrative traditions and capacity, and the nature of the project, in each case there are a number of variables to be considered to allow each country to design its own learning organization. Establishing this kind of project management organization or moving an existing one in this direction is like implementing educational change. Progress can only be achieved incrementally through learning by doing, without the benefit of blueprints or recipes.

5.21 The case of the TBS, cited by Searle, is one example among many in the Bank experience that brings out the importance of learning-by-doing in project implementation. A general review of the Bank experience, with change and improvement programs supported in education projects, found that few of the successful projects were implemented as planned. Nearly all went through major design revisions of the program content and implementation strategy. This process of learning from experience was, however, rarely planned for, systematically. It occurred spontaneously, and often after considerable implementation delays and frustrations of both Bank and Borrower staff. The principal issue is that education change projects in developing countries are nearly always implemented under conditions of considerable uncertainty in respect of the task environment, as well as in respect of the effectiveness of the program in a variety of local conditions. Project designers and implementers can no longer afford to ignore this. Addressing systematically this issue of uncertainty during project preparation and implementation, is an essential condition for better performance. Dealing with environmental uncertainty will require that demand mobilization and coordination issues be given explicit attention. Dealing with programmatic uncertainty will require: first, that effective performance monitoring mechanisms are established to provide managers with the necessary feedback, and second, that remedial action be taken to make adjustments in the project design and implementation strategy. In sum, what is needed is identifying the lessons from experience, and dealing explicitly, up front, and systematically with the consequences of uncertainty, instead of reacting to them in the traditional, haphazard, after-the-fact way, which has typically caused delays, poor performance, and frustration.
REFERENCES


