Implementing Educational Change: What We Know

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"There is nothing so practical as good theory"
Kurt Lewin

This paper lays out the main research-based findings on what is known about implementing educational innovations, and provides a framework for interpreting and acting on those findings. The research base is the cumulative consistent evidence found in studies and reviews of innovation in North America and Europe during the past fifteen years. For those who wish to conduct their own "manageable" review, a bibliography of some twenty-five of the more comprehensive studies is appended. Numerous additional studies corroborate the findings.

The questions this paper asks are directed to the implementation of innovations or the degree to which change actually happens. The first section contains a brief overview of the trends in research on innovation in order to provide a perspective on where we are today. Section two sets forth six basic observations about the phenomenon of educational change; these help to develop a much-needed "way of thinking" about change. Section three addresses the question of "what is educational change?" The idea is to obtain a quick, simple fix on the nature of the phenomenon prior to allowing it to become complicated by lists of causes and descriptions of processes, which are the subjects of sections four and five.

Section six attempts several things. First, it presents some immediate lessons for "what to do about change." These indicate the kinds of insights to be derived from the body of research reviewed. In the rest of section six, two cautions are registered about the management of change. First, in general, the answers to "what is change?" "What causes it?" and "How does it occur?" are more certain than that to "What to do about it?" The first three questions are essentially explanations; last question is one of strategy which poses many more management dilemmas and choices. Second, the research base, though powerful and consistent, is limited to North American
and European sources. I attempt to identify where the main limitations lie compared to World Bank projects. At the same time, the cases in the literature available on "least developing countries" indicate that they have many similarities with respect to key factors. The purpose of this paper is to set the stage for testing the degree of correspondence between experiences with educational projects in least developing countries and those in North America and Europe. The paper does not address the value question of whether particular innovations are "good" for a given country or situation.

BACKGROUND

We can start by defining two basic terms, adoption and implementation. Adoption refers to the decision to take on an innovation, while implementation concerns actual use. The year 1970 marks a watershed in the history of educational innovation. Prior to that date, research studies focused primarily on adoption of innovations (for example, how many educational innovations a superintendent reported). Obvious now, though not at the time, is that knowledge of adoption of particular innovations does not tell us very much. For one thing, adoption by organizations tells us almost nothing about how individual members feel or act. For another thing, use reported by individuals does not indicate whether an innovation is actually in use, let alone the quality of its use.

Perhaps researchers and policy makers were content to stop with adoption because of the symbolic value of having "appeared" to change by launching a major reform effort; or because of the naive optimism of the 1950s and early 1960s or possibly because people were fully occupied with developing innovations and policies and had little energy and resources left for follow through; or, more basically, because initiating projects is much more glamorous and visible than is the time-consuming, laborious front-line work of implementing and maintaining an innovation project; or, charitably, because worrying about implementation was a natural outgrowth of earlier adoption efforts.
Whatever the case, even the term implementation was not used much before 1970. Not until 1971 did the first works appear analyzing problems of implementing educational innovations (Sarason, 1971, Gross et al., 1971). In broad terms, the implementation period during the past fifteen years has consisted of three phases.

The first phase--covering most of the 1970s -- was essentially one of documenting failure. We learned more about what not to do than anything else (don't ignore local need; don't introduce complex, vague innovations; don't ignore training needs; don't ignore local leaders and opinion makers; and so forth). In reviewing the state of the art, Fullan and Pomfret (1977) reported an increasingly specific focus on implementation, or what was actually happening in practice. They analyzed fifteen empirical studies that directly assessed the degree of implementation of a project. From these studies, they derived fourteen determinants of implementation, which they grouped in four broad categories: (1) characteristics of the innovation (explicitness, complexity), (2) strategies (in-service training, resource support, feedback, participation), (3) characteristics of the adopting unit (the decision process, organizational climate, environment-support, demographic factors), and (4) characteristics of external systems (design, incentive, evaluation, and political complexity).

The fifteen studies used a variety of methodologies: observation techniques, focused interviews, questionnaires, and content analysis of key documents. Because one of the goals was to determine how much actual implementation was occurring, questionnaires were found to be least useful. Observation techniques were effective but cumbersome and costly. Focused interviews (designed to zero-in on the use of a specific innovation) and content analyses of plans, curriculum activities, and other documents were the most efficient and effective methods.
In the second phase, covering roughly 1978 to the present, identifying and analyzing success and effectiveness in educational settings became the dominant theme (see Crandall et al., 1983; Fullan, 1982, 1985; Huberman and Miles, 1984; Joyce et al.; 1984; Miles, 1986; Odden et al., 1986; Rosenholtz, 1985; and van Velzen et al., 1986, to name only a few). Research during this phase identified and provided evidence on factors related to success. Depending on the study, evidence of success was defined in such measures as increases in student achievement, degree of institutionalization, or teacher practice mastery, teacher change, teacher commitment. Factors found to be determinants of success included such variables as administrative commitment and support, ongoing technical and other assistance, and a system for monitoring progress. Further advancements were made in breaking the change process into phases (usually three: initiation, implementation, institutionalization) and in identifying key factors at each phase (Miles, 1986). Progress was also made on describing the different roles and role relationships in the process, including the roles of principal, teacher and teachers as peers, district consultant, district administrator, and external to the district consultants (Crandall et al., 1983). Single projects used several methodologies (interviews, content analysis, observation). Case studies also figured prominently, with more attention paid to cross-case analysis and new methodologies to handle data across cases (Miles and Huberman, 1984).

The third phase, on which we are just embarking, can be called managing change (or more accurately the management of change for achieving successful outcomes). At first glance, having clear descriptions of what constitutes success (the second phase) might seem tantamount to being well down the road to solving the management-of-change problem. This is not the case in the sense that explanations of situations are not the same as solution in new situations, although they can help. It is premature to assess the products of phase three. In addition to continued research on factors related to success, new attention is being given to management and strategy-related matters such as the development of guides and plans, training materials, and
strategizing (Crandall et al., 1986; Fullan, 1985; Levine and Leibert, 1987; Loucks-Horsley and Hergert, 1985; and Miles et al., forthcoming).

BASIC OBSERVATIONS

The basic observations about change that follow can serve as general guides to thinking about educational change. They are insights into the phenomenon of educational change that provide important orientations prior to launching into any particular change project.

Brute sanity

George Bernard Shaw first identified the problem of brute sanity, observing that "Reformers have the idea that change can be achieved by brute sanity." The tendency toward brute sanity on the part of change initiators or planners is natural. What could be more rational than advocating a change one believes in and may be in a position to introduce? The use of sheer argument and sheer authority can get a change "on the books," but it is not a very effective strategy for implementing change. Research has demonstrated that persistence and patience and attention to detail in putting something into practice are critical. Brute sanity is the tendency to overlook the complex and detailed processes and procedures required, in favor of more obvious matters of stressing goals, the importance of the problem, and the grand plan. Brute sanity overpromises, overrationalizes, and consequently results in unfilled dreams and frustrations, which discourage people from sustaining their efforts and from taking on future change projects.

Overload

The overload of change projects on implementers is well known, but let us look more deeply at the meaning behind this phenomenon. One could say that the initiation of change projects represents a mixture of political and educational merit. As such, (1) too many projects are launched, (2) projects
are often attempted to be implemented before they are ready (that is, the political process often outstrip the educational development process), (3) overly ambitious projects are adopted, and (4) multiple projects are introduced simultaneously in an uncoordinated way. The basic observation is this: just because a change project is on the books does not mean that it should or could be implemented. No theory or strategy can do the impossible, and the impossible in this case is to implement everything that is supposed to be implemented.

The implications of this observation are several. First, do not view or plan a specific project as if it were the only project that existed. Second, select priorities across projects. Third, within any given complex project, start in on the project and then expand rather than trying to do everything at once (start small and think big in Matt Miles' words).

Implementing the implementation plan

Many people have responded to the research of the 1970s, which documented implementation problems, by developing elaborate implementation plans designed to take into account factors known to affect success. This seems sensible enough on the surface, but ironically it has lead to the problem of how to implement the implementation plan. Implementation plans, when they are first introduced, are innovations as much as, if not more than, curriculum innovations. Everything we know about the dos and don'ts of implementing curriculum innovations must be applied to the problem of developing implementation plans. The advice is to worry about implementing the implementation planning as much as you worry about implementing the content innovation.

Content versus process

Distinguishing between the content of change and the process of change is also helpful. Each represents distinct bodies of knowledge and expertise. They are independent in the sense that one can have expertise in
one and not the other. A curriculum developer, for example, can be highly knowledgeable about a particular curriculum but be a disaster in working with others to implement it. Any given change project requires both elements of expertise to be present and integrated.

**Pressure and support**

Another key basic observation that has become clear in the last two or three years is that effective change, even if voluntarily pursued, rarely happens without a combination of pressure and support. The positive role of pressure in change has been neglected until recently. Studies show that peer pressure and pressure that requires implementation plans but also is responsive to them are effective because they combine or integrate pressure and support (Fullan, 1985).

**Change = learning**

Successful change—that is, successful implementation—is none other than learning, but the adults in the system are learning along with, or even more than, the students. Thus, anything we know about how adults learn and under what conditions they are unlikely to learn is useful for designing and carrying out strategies for implementation.

In short, these six observations are cognitive checkpoints or ways of thinking about educational change, which can be used as general guides for developing a project and also can be useful for stepping back in the middle of a project to consider how the project is faring relative to the six dimensions.
I define change initially as close as possible to the learner and teacher. Let us start with a curriculum project, whether national in scope or local, whether involving adults or school-aged children. The simple implementation question is, "What types of things close to the teacher-learner would change if a new curriculum project were to become fully implemented (used)?" There are four core changes as far as the individual teacher is concerned, which I believe exhaust the generic possibilities. These are changes in structure, materials, practices and behaviors, and in beliefs and understandings. In other words, when a teacher participates in a curriculum project, he or she often faces (1) some form of regrouping or new grouping (structure), (2) new curriculum materials, (3) changes in some aspects of teaching practices (that is, new activities, skills, behavior), and (4) change in beliefs or understandings vis-a-vis curriculum and learning.

Typically, when we think of curriculum projects, we think of the first two aspects—new physical groupings and the production and delivery of new materials such as textbooks; these changes tend to be concrete, visible. The third and fourth aspects of change are more fundamental, however, and more problematic because they involve changes in what teachers do (their practices and related skills) and think (their beliefs and understanding). Achieving successful change is difficult because it must contend with a personal and collective learning process on the part of individuals working in an organizational context.

Why is this definition of educational change important for understanding and doing something about curriculum projects? Policy decision and initial delivery and setup (that is, getting new structures and materials in place) will achieve some degree of change, but this represents the more obvious, structural aspects of change in comparison with the new skills and understandings required of front-line implementers. In the absence of the latter, only superficial change is achieved. The effectiveness of a change
project stands or falls with the degree to which front-line implementers use new practices with some degree of mastery, commitment, and understanding.

WHAT CAUSES CHANGE?

Most researchers now agree that change projects occur in three broad phases: initiation/mobilization, implementation, and institutionalization (Beman, 1981; Fullan, 1982; Miles, 1986). Typical activities during the three phases include the following (see Miles, 1986):

**Initiation**
- Needs assessment
- Deciding to start
- Mobilizing resources
- Developing initial commitments

**Implementation**
- Designing action plans
- Carrying out plans
- Maintaining commitment

**Institutionalization**
- Building-in the process
- Evaluation
- Consolidating commitment

This paper, and this section in particular, focus on the middle phase (implementation), but a few overview remarks are in order. First, the process not precisely linear—mobilization continues into implementation, new participants are added after implementation commences, evaluation begins early in the process, and so on. Second, the process taken as a whole is lengthy. Even small-scale projects could take in the range of five years (one or two years' start up time, two years for early and mid-stage implementation, and
one or two years for consolidation). Large-scale projects could be more in the order of ten to twenty years (three to five years' start up, five to ten years for early and mid-stage implementation, and three to five years for consolidation). Third, the general logic of the change process should be understood; figure 1 systematizes this process.

**Figure 1. General Logic of the Change Process**

1. Imitation Factors
2. Implementation Factors
4. Institutionalization Factors
5. Impact and Outcomes

Use (box 3) is the key to success in the sense that it represents the means for achieving desired outcomes. If effective use does not occur (especially with respect to practices and beliefs on the part of front-line implementers) outcomes will not be achieved.

What can research tell us about the central factors that affect the quality of use of educational projects (the relationship between box 2 and box 3 in figure 1)? The common sense question is, if quality-use requires establishing structures and materials and mastering new practices and beliefs, what is needed to accomplish these? Different lists of factors can be

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1/ The process in a sense is never finished. The critical points are: start up must be separated from implementation; implementation must be conceived of as occurring over more than one year; the question of continuation must be addressed early in the process as well as later.
generated depending on the degree of specificity desired and on the different educational structures that exist in different countries.

We can bypass more complicated classification systems by concentrating on the core factors that make a difference to quality-use. (Table 1 gives content to box 2 in figure 1) by spelling out ten implementation factors. Based on the accumulated research of the past fifteen years, these have been found to be consistently present across a large number of change projects and settings. They are classified into two categories—characteristics of change projects, and characteristics of the process. In particular situations, the latter could be subdivided into local and external factors. The ten factors form a system of variables. They interact. They feed into and on each other.

The main task in this section is to identify and clarify the nature of each factor. Such an understanding is a prerequisite to taking on the more complicated strategic and management tasks of what to do about these factors in planning and implementing educational projects.

Table 1. Factors Influencing Implementation

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<td>School-level (principal) leadership</td>
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<td>Local direction, commitment, and support</td>
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<td>Clear process of implementation and institutionalization (all levels)</td>
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<th>Characteristics of the change project</th>
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<td>Clarity/complexity of the change</td>
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<td>Consensus/conflict about the need</td>
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<td>Quality/practically of the change</td>
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Characteristics of the Process

Taken together, the seven factors in the first part of table 1 refer to the conditions, procedures, and processes that affect the probability that continuous attention and support will be directed to a particular change project. The most powerful factor (although it depends on other factors for its existence) is ongoing teacher training.

Ongoing inservice

Successful change involves learning how to do something new. Once this is understood, it is obvious why in-service education or professional development is a sine qua non of change and why traditional approaches to professional development do not work. Once-only workshops, pre-implementation training (even intensive examples) without follow-up, formal professional development sessions, and courses unconnected to the job and to the real life of the organization have little or no impact because they are not designed to provide the ongoing, interactive, cumulative learning necessary to develop new skills, behavior, and conceptions in practice. Huberman and Miles (1984), in their detailed examination of twelve case studies of innovation, put the positive case best:

Large-scale, change-bearing innovations lived or died by the amount and quality of assistance that their users received once the change process was under way. ... The forms of assistance were various. The high-assistance sites set up external conferences, in-service training sessions, visits, committee structures, and team meetings. They also furnished a lot of ongoing assistance in the form of materials, peer consultation, access to external consultants, and rapid access to central office personnel. ... Although strong assistance did not usually succeed in smoothing the way in early implementations, especially for the more demanding innovations, it
paid handsome dividends later on by substantially increasing the levels of commitment and practice mastery. (p. 273)

The research literature offers countless other examples confirming the critical role of continuous inservice (see the bibliography, including Crandall et al., 1983; and Shovers, 1985). Clearly preimplementation training is not sufficient. What is needed is close-to-the-scene, ongoing inservice during implementation.

A more difficult question is, What are the characteristics of effective ongoing inservice? The greatest effects are achieved when explanation of new practices is combined with demonstrations, opportunity to practice in nonthreatening contexts, and feedback in the classroom. Inservice activities should come in a variety of forms--event-specific workshops, meetings, and conferences; ongoing availability of consultants, local facilitators, and user manuals; and use of a variety of inservice leaders--external consultants, peers, and administrators.

The successful examples in the research reflect much more intensive and systematic interaction than traditional forms of inservice, but some evidence indicates that a small amount of time, used regularly over a period of several months and alternating between practice and training can be effective (Crandall et al., 1983). In any case, locally available inservice training during implementation is essential.

School level (principal) leadership

The research evidence on the critical role of the principal in facilitating or inhibiting change in schools is equally compelling. Certainly, change can occur without the principal (Crandall et al., 1983), but it would not be difficult to assemble 100 research studies that show that when the principal is an active supporter of a change effort, the change is much more likely to succeed. (For reviews, see Fullan, 1982; and Leithwood and Montgomery, 1982.) Virtually every line of inquiry ends up identifying the
significance of the principal in bringing about change (see, for example, the comparison by Clark et al., 1984, of school effectiveness and school improvement, and Showers' 1985 analysis of the role of the principal in successful staff development).

Principals need to be knowledgeable about the goals and expected uses of an innovation in order to understand the needs, progress, and problems teachers experience during implementation. They may choose to undergo training and become users themselves and to provide teacher assistance directly. Their participation at that level is not essential, however, so long as they provide access to resources, training, and assistance from others. Research indicates that principals often depend on assistance from a "second change agent" in the school—for example a vice-principal, a key teacher, or a central office consultant—especially in secondary schools.

Teachers are unlikely to change (that is to experience the conditions necessary to stimulate and support change) if the principal does not communicate clearly at the outset and during implementation that the change is a priority, that intended users are expected to follow through, and that opportunities and resources will be available to resolve problems encountered during implementation.

Research indicates that an effective principal has a good vision of what the school should be accomplishing for student and uses external innovations as opportunities to further those aims. Overall, the principal must create a positive climate for change by attending to the following components of the change process:

- Initial and follow up in-service
- Consultative assistance during implementation
- User planning time (during early implementation)
- User interaction and problem solving
- Latitude for risk taking, errors, and gradual mastery of new practices
- Protecting users from undue demands
- Holding users accountable for the change
- Recognizing/rewarding user efforts

We can broaden the conception of the principal's role by referring to the school as an organization. What is important is not the principal per se, but the principal as head or leader of the organization. (In this sense, leadership teams at the school, preferably involving the principal, can serve this function.) The values and norms within the school as an organization can foster, support, and propel professional development and principal/teacher activism (Little, 1982; and Rosenholtz, 1986). Implementation is learning. The school as the organization closest to the individual implementer presents the most powerful set of immediate conditions determining the degree of change (or nonchange).

Local direction, commitment and support

"Local" in this case refers to the organizational entity immediately above the school. In North America, this is normally the school district, which has legal authority over groups of schools for certain kinds of policy and for administration and implementation of policy. This factor is layered on the previous two factors in the sense that it frequently influences and in some cases deliberately steers inservice and school-level activities. The commitment and action of local district administrators and consultants play a major role in the success of districtwide change projects (Crandall et al., 1983; Huberman and Miles, 1984; and Fullan, 1982, 1985). General endorsement and verbal support do not suffice. Teachers and principals often do not invest the effort needed from them if local administrators do not demonstrate with actions as well as words that they take the change seriously.

The case studies by Huberman and Miles (1984) provide the clearest detail of what local administrators actually do, but many more studies corroborate their findings. Local administrators help to test and clarify the need for change. Implementation is more likely to happen when communication
and pressure are clear and consistent both initially and during implementation. In successful cases, local administrators give priority to quality of use—not to ease of implementation; otherwise, innovations become "downsized" or adapted away.

Administrative pressure must be accompanied by assistance. Assistance requires adequate resources for training, consultative help, release time, materials, and other necessities throughout the change effort (the relationship to the first factor is obvious). This means targeting resources on implementation requirements and on specific problems.

Clear process for implementation and institutionalization

This factor differs in two respects from the factor just discussed. First, it is the technical side of the commitment coin. It raises the question of what tasks and procedures should be addressed and in place. Second, it refers to multilevels of planning. Most large-scale change efforts involve at least three levels of implementation planning—school level, district level, and state level. Instead of differentiating roles according to these levels, the focus here is on the nature of the tasks.

Successful implementation does not just happen, even in the presence of great initial enthusiasm. The people organizing and facilitating a change project must have a vision of the change process that is conceptually sound, organizationally practical, and politically sensitive to the local and external context. An effective process for implementation is one that explicitly takes into account the other nine factors in table 1.

Good implementation requires good planning. Plans do not have to be in the form of elaborate documents, but they do need to focus on the right factors and have the approval of people in positions of authority to see that they are carried out.
During the initiation phase, planning should focus on creating an organizational structure and process for the change. This includes setting realistic timelines for implementation and deciding when to introduce the change to different target groups throughout the system, as well as determining strategies for such things as acquiring and distributing materials, communicating role expectations, providing initial and follow-up training, consultative assistance, monitoring and problem solving. It also means establishing a priority for the project and coordinating it with other innovation projects in the local setting. Research suggests that widespread participation of implementers at this stage of the planning process is not essential (it is essential during the subsequent implementation phase) as long as the planners have a good sense of the factors influencing change and what can be done about them.

Effective planning during implementation involves a basic shift in focus from the organizational design for project implementation to the progress, problems, and concerns that arise. This ensures that resources are directed where needed and may lead to changes in the original game plan and support system. Orchestration and coordination are critical functions during implementation. Some person or persons in change-facilitating roles must work actively at keeping things together and people in contact. In other words, setting up an organizational process is one thing. Making it run is another.

Good planning at this stage is dependent upon active input and participation of users and front-line managers and facilitators, because they are in the best position to identify the nature and location of problems and may contribute effective solutions from the field. Although a top-down approach can be used at the initiation stage, administrators must share control over the process with the users during implementation.

Although the discussion in this section is somewhat general, quite specific implementation planning models have been developed and are in use (Fullan, Anderson, Newton, 1986).
The significance of establishing a clear process for implementation can be best appreciated by observing that in the absence of such a process even high initial enthusiasm on the part of leaders and teachers can be squandered. Similarly, early reluctance is often transformed to commitment when supportive procedures are used. Clear, effective procedures amount to the capacity of organizations to manage and administer change projects.

**Monitoring and problem solving**

Monitoring and problem solving should be part and parcel of any good process model but it is often the most difficult component to establish. In our research on implementation models in Ontario school districts, we found that the last component to become incorporated was effective monitoring procedures. (Fullan, Anderson, Newton 1986).

The success of implementation is highly dependent on the creation of effective ways of getting information about implementation progress and problems from teachers in the classrooms to other teachers and to appropriate building and central administrators and assisters. Although formal technologies for evaluating implementation are available, monitoring does not have to be conducted like research. The crux of the matter is to get the right people talking together about implementation issues on a regular basis. Furthermore, data on student learning and attitudes are needed for a number of reasons, including feedback on progress and, at some point, information to decisionmakers.

Getting information about implementation progress needs to be channeled into provisions for additional in-service and assistance, materials support, and possible modifications in plans, organizational arrangements and the innovation itself -- that is, problem solving.

The linkage of implementation monitoring to official performance appraisals is problematic. Available evidence suggests that teachers do not necessarily oppose this approach as long as they know it is coming and as long
as the focus is on helping them do it better, rather than evaluating them if they only achieve partial success. It is another way of communicating the seriousness of administrators' intent, but it must be tied into the overall support system if it is going to work.

**Community support**

Less research is available and the findings are more variable on the role of community support than for any of the other nine factors. It is a factor that varies in prominence across cultures and communities, but it is a factor worth examining carefully in any educational change project.

In North America, research generally indicates that implementation of most educational innovations proceeds without much community involvement (Fullan, 1982). When community members do take an active interest in particular innovations, their support for or opposition to the change can be a determining factor.

If parents actively support a specific innovation, school boards and administrators are more likely to make it a priority, apply pressure, and commit resources, and teachers are more likely to use it. On the other hand, active parent opposition can easily thwart implementation, no matter how good the innovation is or how committed school personnel are to its use.

**Environmental stability**

Change projects take time because they involve individual and organizational learning processes. Even small-scale changes take a few years across the three phases of change. Research again shows clearly that changes in the organizational and societal context strongly influence the outcome of implementation (Huberman and Miles, 1984; and Van Velzen et al., 1986).
Frequent or unexpected changes in administration and project leadership, for example, can have a devastating effect on the continuity of a change effort. Career advancement of key personnel is common, both as a result of opportunistic motives and of innovation success. A great deal of routine shuffling around of principals and support staff occurs in some school systems without much regard for project continuity. Central administrators can easily create environmental instability by forgetting about local school context.

The negative effects of turnover in key personnel can be minimized by ensuring that responsibility for implementation management and support are spread among various people, by institutionalizing the responsibilities in the positions rather than depending on the particular individuals in those positions, and by considering project continuity in the criteria for administrative transfers.

Other important features of the local and macro environments include such phenomena as major shifts in government policies, alterations in implementation-relevant technologies, demographic changes in communities and student populations, economic trends affecting the availability of funding, and shifts in public opinion. In addition, one can never anticipate all the "normal crises" that can inevitably occur during the course of implementation—a flu epidemic, a snow storm on workshop day, a teacher strike, for example. The basic message is that organizational support for implementation must be flexible and tenacious enough to deal with unexpected turbulence in the local and broader environmental context.

Characteristics of the Change Project

Three sets of characteristics pertaining to the innovation or change project were identified in table 1—clarity/complexity, consensus/conflict, and quality/practicality. Four general points can be made about these factors: (1) they are variables, differing from project to project; (2) they make a difference in the likelihood and quality of implementation; (3) they
are not simply "objective" factors but must be seen in relation to particular settings and people; (4) they vary over time in a setting—that is, they must be assessed across the phases of initiation, implementation, and institutionalization.

Clarity/Complexity

To put an innovation into practice successfully, implementers must gain a clear understanding of what to do and how to do it. Policies, written guides, in-service programs, and participation in development or planning can help clarify the meaning of change for those involved. Deeper understanding, however, only comes when teachers are given opportunities and time to work with an innovation in the classroom and to talk with other about what they are doing.

Innovations vary widely in their initial explicitness and in their complexity. For individual implementers, complexity can be defined in terms of (1) the number of components of practice affected, (2) the magnitude of difference from existing practices and beliefs, and (3) the difficulty of learning the new practices. More complex innovations require major changes and are harder to understand, therefore, they are more difficult to implement. More complex changes are also more likely to yield nontrivial results than are innovations that demand less personal effort and organization support (Huberman and Miles, 1984).

The sheer scope of a change project—the numbers of people and organizational levels affected—also compounds problems of clarity and complexity.

We are not taking up at this stage the problem of what to do about such factors as clarity and complexity, only noting that they are critical variables to address. We can anticipate some of the implications, however; for example, conceiving clarity as a process, something to be increased as you
go along, is helpful; as is the guideline for complexity: start with some components and build in others as the process unfolds.

Consensus/Conflict (Need)

The prospects for successful innovation are obviously greater when those expected to carry out a change agree on the need for and appropriateness of the project and on its priority relative to other local concerns. Educational innovations are often adopted without widespread initial agreement on the need for change and choice of solutions, and this does not necessarily spell failure. Teachers' acceptance and commitment can develop during implementation when other conditions are favorable (for example, a high-quality, proven innovation; administrative commitment; and adequate assistance). As with clarity, testing, generating, and reviewing, the degree of consensus on the project or the degree to which it addresses an important need is more of a continuous process than something achieved at the outset.

Quality/Practicality

Innovations are more likely to get implemented and stay implemented when they obtain some early results such as a sense of control on the part of teachers and a visibly positive reaction from students. Thus, the chances for successful change are greater if the technical certainty of the innovation is already proven and if at least some of the benefits for teachers and students are immediately apparent. If the impact of the innovation is unknown, its success may depend on careful implementation and monitoring of effects and modification of the innovation during implementation.

Innovation quality is also a matter of how practical the innovation seems to teachers. Practical innovations are those that address salient student/teacher needs, that fit well with the teachers' situation, and that include concrete how-to-do-it information. Practical does not necessarily mean easy, but it does mean the presence of concrete next steps toward greater and more sophisticated implementation.
Practicality also depends on the trade-off between personal costs (time, effort) and actual benefits (sense of progress, impact). It is closely tied to organizational capacity to manage and support change. For major changes, if the necessary resources, support, and pressure are not present on a continuous basis, those expected to implement the change are likely to dismiss it as impractical, no matter how much potential it may have.

This has been a somewhat sweeping pass through the ten factors. Clearly, change is a process that takes time and proceeds in phases. A definable number of major factors determine the likelihood of success, and these factors are interactive. This section has stressed research-based explanations of success, in a relatively static way; the next section considers briefly how change occurs, or what is happening as these factors interact.

**HOW DOES CHANGE OCCUR?**

At a comprehensive level, understanding how implementation occurs would involve examining a given change project, mapping out a casual sequence of the key factors and their interrelationships, and then "reasoning through" the sequence with supporting evidence and plausible explanation. This has already been done to quite an explicit degree by Huberman and Miles (1984) for twelve case studies and has similarly been applied to a number of World Bank twelve case studies. I will not repeat this process.

One case excerpt will serve to illustrate and draw some basic conclusions about how effective change unfolds and what basic things are being accomplished in the process. Huberman (1981) conducted a case study in the United States of one school district's use of a new reading program and found widespread implementation across the classrooms in the district. Two of the explanatory factors singled out were "the quality and amount of technical assistance" and "sustained central office and building-level support" (p.
iii). Huberman also found that early difficulties were typical: "Teachers, trainers and administrators all talk of a 'difficult,' 'overwhelming,' sometimes 'humiliating' experience during the first six months, and for some during the initial two years" (p. 81). He notes that almost every respondent attributed the survival of the program to strong administrative support and to frequent assistance. Huberman explains that the initial period is one of high anxiety and confusion followed by some settling down. After six months, "there is cognitive mastering over the individual pieces of the program, but little sense of the integration of the separate parts or, more globally, why certain skills or exercises are related to specific outcomes. Concern for understanding the structure and rationale of the program grows as behavioral mastery over its parts is achieved" (p. 91). In other words, changes in attitudes, beliefs, and understanding tend to follow rather than precede changes in behavior.

This is a very brief excerpt of a complicated process but it illustrates concisely what is being accomplished and how. The process achieves two main outcomes:

1. It achieves **progressive mastery** over the innovation by frontline implementers.

2. It **builds commitment** on the part of implementers and managers as it proceeds.

These outcomes are accomplished through a management process that essentially incorporates the ten factors described in the previous section. Stated another way, successful implementation is an **individual development process** within certain **organizational conditions and strategies**.
WHAT TO DO ABOUT IT?

This section addresses three matters: first, sources containing guidelines for managing change; second, some dilemmas in the change process; and third, possible differences between the research base used for this paper and the types of education projects the World Bank typically funds.

A number of helpful guidebooks, techniques, and/or recommended strategies for implementing change projects are available. Loucks-Horsley and Mergert (1985) for example, have written a very useful booklet based on the following seven steps:

1. Establishing the project
2. Assessment and goal setting
3. Identifying a solution
4. Preparing for implementation
5. Implementing the project
6. Reviewing progress and problems
7. Maintenance and institutionalization

Miles et al. (forthcoming) specify the key skills of change agents, and develop training modules geared to central tasks and skills. Fullan, Anderson, and Miles (1987) formulated an interrelated six-part strategy for implementing new information technologies in Ontario schools, focusing on: (1) competence development, (2) consultant development, (3) stimulation of naturalistic efforts, (4) diffusing/supporting effective practice, (5) networking, and (6) building organizational capacity. Crandall et al. (1986) lay out basic strategic planning issues: pedagogic vs. organizational focus, modest vs. major change, internal development vs. importing, development by teachers vs. nonteachers, and replication vs. adaptation. They then relate these issues to the task of developing implementation plans.

The bibliography at the end of this paper, taken as a whole, contains good advice for such core tasks as designing effective in-service,
building commitment, marking progress, and the like. These sources contain new insights into managing change, including--

- the necessity of combining pressure and support in the change process
- the critical importance of reducing some of the early costs and increasing some of the early rewards for implementers
- the need to think big, but start small in order to achieve some manageability
- the tendency for behavior to change before beliefs, and all that that implies for in-service
- the realization that achieving clarity, skill, and commitment is a progressive process.

Those are useful starts, but much more precise work remains to be done in developing diagnostic and planning instruments and guides. Compared to the great strides that have been made during the past fifteen years in the analysis of educational change, we are on much more difficult and less well-known terrain when it comes to the management of change.

The second matter for this section, and the main reason the terrain is so difficult, is that managing is dilemma-ridden (see for example, Crandall et al., 1986; and Huberman and Miles, 1984). Three of the major dilemmas concern planmaking, where and how big to start, and specific innovations vs. organizational capacity.

If we know that certain factors influence success (for example, those listed in table 1), obviously we should plan to address these factors in advance of implementation. This assumption has two problems. The first is that, although successful projects do have certain characteristics in common, including a process for managing change, they may not have had an elaborate implementation plan, which was deliberately followed. Effective projects can evolve in complex and awkward ways (see Rosenholtz, 1985). The second problem is that a plan is just that: a plan to do something, not the actual doing of
it. Ironically (but not inconsistent with our knowledge of managing change), one of the most frequent problems currently is how to implement the implementation plan. The implication is that plans, like any innovation, must develop in ways that allow participants to modify, become skilled in, and internalize the plans and procedures.

The second dilemma—where and how big to start has two aspects. The first concerns the proportion of users, and the second, the type and magnitude of the change itself. Does one start with a small or large number of people? Should one start with volunteers or include all those affected? Should one undertake the exercise demanding large-scale changes or more modest ones? (Huberman and Miles, 1984 p. 280, refer to ambitiousness versus practicality.) Of course, these dilemmas have no clear answers. The best advice is to start small with expansion in mind. The number of participants should be small enough to be manageable but large enough to be conducive to sustained interaction among those implementing change. The scope or magnitude of the change can be quite significant, provided that people are able to start with parts of the change and build incrementally. The manager of change has a number of leverage points, the most important of which is the ability to foster ongoing interaction and assistance, especially necessary during the early stages of implementing a new programme or reform. In such a system, peers influence peers. What is learned in first attempts can be used for improving the quality of managing second and third attempts and so on.

The third dilemma is the question of whether to concentrate on specific innovations (for example, revising the teaching of science) or on organizational capacity per se (for example, improving leadership). The relationship between the two should be understood. In the innovation-specific approach, the change itself is relatively focused and takes center stage; the organizational capacity factors are in the background, although they influence the likelihood of success. In the organizational capacity focus, the so-called background factors are the innovation; any particular innovation is relatively unimportant (or in any case arises from changes in the organizational factors). Clearly, both innovation and organization are important and
interrelated and should go hand in hand. Where to start and how best to balance them over time is much less clear.

What is the nature of the research base used in this paper (most of which is North American), and what are the main differences compared to education projects in the World Bank? Those closer to the projects can best answer the question of applicability and limitations, but here is a starter list of the more obvious differences (see also Farrell, 1987):

Table 2. Characteristics of Change Projects in North America vs. World Bank Project

<table>
<thead>
<tr>
<th>North America</th>
<th>World Bank Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific innovations</td>
<td>Reforms</td>
</tr>
<tr>
<td>Small scale</td>
<td>Large scale</td>
</tr>
<tr>
<td>Short time-frame</td>
<td>Long time-frame</td>
</tr>
<tr>
<td>Strong infrastructure</td>
<td>Weak infrastructure</td>
</tr>
<tr>
<td>Political and economic stability</td>
<td>Instability</td>
</tr>
</tbody>
</table>

Many, but not all, of the North American cases are based on specific innovations rather than major reforms. Reforms are "bundles of innovations" (van den Berg and Vandenberghe, 1986). As such, they have many more components than a single innovation has. Second, North American innovations are comparatively small or midscale (a school, selected classrooms in a district, or districts in a state), while World Bank projects are large, covering whole nations and tens of thousands of people. Third, the time frames in the research reviewed are short, three to five years, compared to the ten to twenty or more years (indeed, never-ending cycles) of Bank projects. Fourth, as technically developed countries, Canada and the United States posses a potentially very powerful infrastructure--money; trained change agents and other leaders; developed, tested innovations and associated materials; and a communications and resource flow system in which the basics are taken for granted and access to wide ranges of expertise is commonplace. Moreover, relative economic and political stability is normal.
Projects with the characteristics noted for World Bank projects tend to be complex, vague (exactly what is the innovation?), hard to coordinate, slow moving, and notoriously difficult to evaluate or assess in progress. Moreover, they are projects in which virtually all of the key leaders (internal and external) may have left or have been replaced before project completion and in which brand new, different major reforms may replace existing ones in midprocess.

There are some encouraging possibilities, however. Educational changes in Europe tend to be reform in nature, and many of the principles and factors, that affect the innovation process apply in these large-scale policy situations (see van Velzen et al., 1986; van den Berg and Vandenberghe, 1986; and Louis and van Velzen, 1986). Preliminary analysis of Bank cases also indicates the applicability of "the implementation perspective" in attempting to distinguish and explain differential project success (Verspoor, 1987).

What is needed is for those involved in World Bank projects to develop their own implementation analyses and frameworks. The kind of research literature presented in this paper may productively inform these frameworks, even though whole new dimensions and meanings will be required.
BIBLIOGRAPHY


