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ARTICLES

ANNOUNCEMENTS

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IS EDUCATIONAL PLANNING DOOMED TO SOME INHERENT PITFALLS? SOME THEORETICAL AND METHODOLOGICAL REMARKS ABOUT CHOICES AND KNOWLEDGE

A large gap exists between planning as a process of raising expectations and implementation as a process of fulfilling promises. It seems that this gap is even perceived to be an inevitable part of the planning cycle. As we shift our emphasis from results and outputs of planning toward its process, we should shift our emphasis from the output-failure orientation toward an error-making process. Too often we treat mistakes according to their results instead of by the way they are produced initially. Although one can argue that a mistake is a mistake regardless of the way it has been reached, there is an essential difference between an "intelligent" mistake and an "unintelligent" one. An intelligent mistake can actually be a better analyzer of the planning process than the correct answer that was reached by mistake or by chance. If optical illusions reveal far more about human vision than correct perceptions do (Dehn & Schank, 1982), then possibly, the study of the basic errors and illusions involved in planning may improve our understanding of the planning process and may even reduce some of the possible errors.

Mistakes are important windows to the process of planning. According to the Failure Driven Memory Theory (Schank, 1981), errors have been hypothesized as central to learning in three basic ways: First, errors detected during the process force one to shift one's attention, helping to focus on the important elements. Second, such refocusing will be reflected in alternation of the information organization. Finally, similar future processes might take into account this newly learned information.

We might differentiate between various types of errors. The first group can be considered as "unintelligent" mistakes. These are mistakes derived from misuse of information, forgetting, misuse of well-known methods and procedures, on the one hand, and structural reasons, such as insufficient infrastructure, lack of work force, and communication networks, insufficient skills of the planner, decision makers, or implementers, on the other hand (Waterston, 1965). Such mistakes are relatively easy to monitor.

The second broad group is "intelligent" mistakes. This group contains four types of mistakes. The first type is the result of unknown variables which intervene and change the course of action in unpredictable ways. Hence, the basic notion of uncertainty makes error-free planning ridiculous. In complex issues such as educational planning, these mistakes are unavoidable. The best that can be done

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is to expect their appearance in some unknown time in the future by employing contingency planning, for instance.

This second type of errors includes the functions of judgmental fallacies, illusions and biases—part of the human process of cognition. The search for understanding the roots of these fallacies is yielding a better insight into the process of human thinking, resulting in a better awareness of the fallacy possibility and may enable the development of some checks and balances to address fallacies during planning processes.

The third type of mistake is derived from human idiosyncracies and perceptual variations that affect our choices and behaviors. Different states of emotions will yield different cognitive results. If planning is indeed a communicative process (Inbar, 1976), then messages might be differently perceived when derived from different idiosyncracies and frames of reference.

Finally, we have to face errors that are the result of contradictions inherent in the planning process. There are many choices which have to be made among poor alternatives, or, even if the alternatives are good, they are perceived contradictorily by different people. Consequently, there are processes which lead to paradoxical situations where any move might lead to undesired consequences.

This categorization is by no means exclusive or based on the assumption of mutual inclusiveness. Undoubtedly there are overlaps among the various types and, furthermore, they are clearly integrative. The existence of one might trigger another.

The combination of the second and fourth types of mistakes will be the focus of this article, i.e., the combination of human judgmental fallacies and contradictory planning processes. Our main argument is that these combinations are the basis of many failures that are built into the planning process. We are, then, addressing a set of pitfalls inherent in the planning process; pitfalls in which it seems that planners are doomed to be trapped. Therefore, the main purpose of this article is to identify and analyze some of these major pitfalls. This attempt, though, is an explorative venture that may lead to further empirical and theoretical studies. At this stage the focus will be on pitfalls which are related to the interaction between uncertainty, knowledge, information, and choice.

These suggested pitfalls are, of course, not exhaustive. They are only a demonstration of the phenomena. However, they were chosen since they reflect some of the basic ingredients of the process of educational planning.

Uncertainty, Knowledge, Information, and Choice

Planning pitfalls may be seen as another interesting case of systems analysis pitfalls. Majone and Quade (1980) defined a pitfall as "a conceptual error into which, because of specious plausibility, people frequently and easily fall . . . [and] should not be confused with blunders or factual mistakes" (Majone, 1980, p. 7). It can be added that the more pervasive uncertainty is, and the more complex processes are, the greater the possibility of pitfalls.

Davis's statement is clear: "It is difficult to foresee the future. It is even more difficult to do anything about it, and yet presumably this is the purpose of planning when applied to tracing forces, events and future consequences" (1985, p. 7).

Indeed, as paradoxical as it may sound, planners view uncertainty and imperfect knowledge as one of the main obstacles of planning, when policy makers and decision makers are looking to planning as one of the more promising methods to cope with uncertainty and imperfect knowledge. From this viewpoint planning is looked upon as a method of making the possible feasible. But at the same time planning is designed to widen the field of possibilities, the scope of alternatives in the course of making choices. The exercise of choice, in fact, is one of the principal elements of planning (Davidoff & Reiner, 1962).

For all practical purposes, all plans involving choices among uncertain outcomes have one thing in common: They ask for judgment about the likelihood of the planned results. Improving such judgment is basically dependent on three prerequisites:

1. Knowledge of past outcomes of the events, i.e., experience and data.
2. Assumptions about the relationship and interactions of variables that will explain past or future variation of outcomes, i.e., a model.
3. Sound procedures for interpreting the interactions and analyzing the data, i.e., statistics.

It may be possible to reach a relatively high probability of correct prediction in situations that involve few and identifiable variables and with which we have had many experiences; however, "in most areas of social planning we cannot even extrapolate with reasonable reliability how policy statement implications will affect the future" (Duhl, 1967, p. 779).

The problem becomes more complicated once we accept the notion that educational planning is basically a "wicked" as opposed to "tame" problem. "Wicked" problems are unique yet interconnected; they can be differently explained and do not have unambiguous sets of solutions. Such problems are mainly a symptom of other problems, do not have a terminal point of solution, and have no immediate criteria for evaluating results (Rittel & Webber, 1973).

Consequently, planning methods and models which are the product of socio-psychological dynamics are limited. There is "no social system and few physical ones (that) can be satisfactorily modeled" (Davis, 1985, p. 6). Caught in this web of contradictory pressures, expectations and possibilities, planning has to be managed, thus resulting in sub-optimization (Davis, 1985). This is the point for the analysis of some of the basic pitfalls of planning.

Pitfalls of Choice

Planning entails choices. The alternatives one has at any given point in time depends upon what choices one has made already, and any new choice affects future options. The process of choosing, then, is central to the planning cycle. Choices have to be made in all the stages of planning; in the way the planning objectives are defined; and in the way the issues are confronted, the boundaries are determined, information is gathered, organized, analyzed, evaluated, and so forth.

The classical way of representing the path of choices is a tree structure. If one could lay out a complete tree, with all possible branches available, the problem of choice could be viewed as a problem of steering one's way along the branches through the choosing-map. However, such trees are far too big to be drawn; even

a tic-tac-toe game will have 9! or 362,880 choices of moving along all nine squares (if the game is not won earlier). This enormous choice is in a game in which all the alternatives are known, and has a termination point, i.e., clearly a "tame" problem. In most educational problems, which tend to be "wicked," we do not know all the alternatives in advance and there is no natural termination point.

The interesting point is the inherent exponential growth pace of the number of choices, which suddenly becomes uncontrollable due to the computational explosion (Dehn & Schank, 1982). Consequently, one can have a method that performs quite well until the problem becomes a little more complicated, when it suddenly explodes out of control and the method ceases to be of any practical use. This is where heuristic choice enters.

Any planning involving exponential growth has to use heuristics to restrict the widening span of choices. If we return to the tree concept, the problem planners face is *pruning*, using the concept developed in Artificial Intelligence (AI). We have to prune the branches to be able to comprehend the span of choices, and the closer to the root we prune, the more crucial is the effect on our choices. The problem is to develop the consensual, tractable pruning criteria. Since such criteria are not in existence in most educational plans, planners are caught in a dilemma: It is necessary to make pruning choices early enough in the planning process before events become uncontrollable because of the choice explosion. However, in this stage, choices have the greater effect and are critical, and without agreeable, sound criteria, planners will tend to postpone such pruning choices. This is a typical pitfall situation.

Let us now look at several methods of approaching the exponential explosion of choice with which space planners are faced. The first approach is to move systematically through the whole tree. Obviously trying all paths is impossible. Even if we could interrelate the span of choices algorithmically—which we cannot—trying all the paths systematically does not work because of exponential growth. Furthermore, in real life one cannot just erase the past and start from the beginning, as in a chess game. There is no real beginning; any choice has to be taken in the middle of the stream.

Second, if we cannot explore all the possibilities, one might suggest a random search. This appears to be quite strange at first glance, but if we really do not know very much about the outcomes of the various choices we have to make, and we assume equal probability and risk to the various choices, or we assume a normal distribution of probabilities and risks, it might not be a bad idea at all to take, randomly, a sample of choices and explore among them for the best chain of choices.

Indeed, in gaming situations or intellectual exercises, when events can be numerically translated, we often use such an approach. However, in education as well as in many other social issues, randomized choices will tend to be avoided. How would it appear if teachers would explain their use of a certain math book as a choice taken randomly? Generally speaking, the more sensitive the issue is, the less we will use randomized techniques for choice, even if it might be the best technique available logically.

Instead of a random sample, one might look for clues or familiarities from experience to provide the advantage to one of the choices. This might end in the

process in which one judges the situation, not according to the objective probabilities, but rather according to the perceived representation, which, according to the representative fallacy (Kahneman & Tversky, 1972) is reducible to similarities, or based on stereotypical resemblances, or reflects causal or correlational beliefs.

A third way of pruning would be by exploring all the *first* few choices in view and by choosing among them. In other words, the choice is derived from the first impressions of the case, thus the more the first choices are perceived as promising, the more likely that they will be chosen. It becomes clear that this can lead to pitfalls. There are many alternatives that might look promising in their first stages, but may become very complicated and uncertain and vice versa. Indeed, knowing this heuristic tendency, planners, advisers, and teachers have learned that it would be wise to have a working plan that starts with feasible familiar steps since these are highly attractive and thus easier to accept.

The promising look of the first round of choices might be based on experience at these levels, or on perceived convenient feasibility of the first stages. Such choices will be vulnerable to the availability fallacy (Tversky & Kahneman, 1973), in which people tend to reason with information that comes readily to mind, derived from familiarity and experience, even if the information has no statistical validity. Practically, it means that if a planner is faced with a situation with, let us say, 10 alternatives in first sight, and there are no means by which to examine all 10 alternatives, the planner will compare the first stages of all alternatives and will then tend to choose that alternative in which he or she had the most experience in its first stage. This is a clear pitfall junction. A feasible first stage does not ensure that what follows will be the same. Similarly, the first stage that does not look familiar does not mean that the rest of the chain will follow suit.

A fourth method of narrowing the overwhelming choice situation is by *choice reduction.* Derived from the assumption that problem solving is a hierarchical affair, the choice reduction method asumes that there are sub-choices that include versions of the original choice. Consequently there are some basic mechanisms that represent the process of choice and some criteria that represent the essence of the basic choice. Thus, by using the right mechanisms and the right criteria, one can generalize from a sub-choice to the main one. A practical example can be seen in the General Problem Solver (GPS) program (Ernst & Newell, 1969; Newell & Simon, 1972). The choice reduction method is an attempt to ease the burden of choice and to reduce the perceived risk, offering the planner a feeling of control and a sense of familiarity. However, once we move from "tame" problems to more "wicked" ones, as in educational planning, the assumption about the hierarchical nature of the planning process becomes less clear.

Pitfalls of Control and Probability

Confronting a choice situation for a "wicked" problem means having to choose between highly uncertain alternatives where the probabilities for success are very dim. The interesting point is that once a choice has been made this choice will be perceived as more promising than the other, although there is no objective reason to assume higher success probability for the chosen alternative.

This might be explained by the *illusion of control.* An illusion of control is defined as the expectancy of a personal success probability inappropriately higher than the objective probability would warrant, and as a function of one's belief of having some control over the outcomes (Langer, 1975). Such an illusion can be a function of the very process of choice, where spending some time and thought on the task and becoming familiarized with the variables while actively engaged in the task, will increase one's perception of the probability of success.

The classical studies of such illusion of control can be seen in lottery and dice-throwing, where outcomes are completely chance-determined and are not influenced by the choice process. Results of these studies showed that people valued those purchased lottery tickets which they chose more than those tickets which were handed to them (Langer, 1975). Similarly, people tended to place higher bets before the dice were tossed than just after the toss, but before the outcome was disclosed (Strickland, Lewicki, & Katz, 1966). Put differently, involvement will tend to increase perception of success even when the participation and involvement by themselves do not affect the results.

Hence, participation and involvement might have an interesting side effect: reinforcing the development of control illusion. This might be another interesting explanation of the fact that participation and involvement are often related to the reduction of resistance to change and might explain the participatory planning approach differently.

Any planning is based on predicted relationships between means and ends, between series of consecutive events. It is based, in other words, on some underlying assumptions about causality. Consequently, planners will tend to develop a tied conjunctionary plan with the assumption that the organization will develop a correlative disciplinary process of implementation to reduce the plan's level of uncertainty. This refers to what was conceptualized elsewhere as reducing the plan's degrees of freedom (Inbar, 1975). This conjunctive hierarchical plan is vulnerable to the conjunction fallacy in probability judgment (Tversky & Kahneman, 1983), which is another aspect of the control pitfall.

In a conjunction fallacy one perceives the conjunction as more probable than one of its constituents, which is a clear violation of the fundamental law of probabilities, where conjunction cannot be more probable than one of its constituents. Planning as a compound event is exposed to the violation of this rule. The successful implementation of a plan has a conjunctive character: To succeed, each of a series of events must occur. Although each of these events may be very likely, the overall probability of success may be quite low if the number of events is large. The attribution of a high probability to one or several events in the chain-link plan will tend to lead to an overestimation of the probability of the whole plan. This might be even higher than one of its events, which violates the fundamental law of probability.

Let us take the introduction of a new teaching method as a case in point. Undoubtedly, introducing a new teaching method so that teachers will actually make use of it and furthermore make the best of it is a long process that incorporates changes in teachers' attitudes and behaviors and might assume various organizational changes. The uncertainty of successfully accomplishing such a plan is indeed very high. The overall probability of the plan is a product of the probabilities of all the conjunctive events.

One of the methods of incurring the needed change in teachers is by assembling them, in small groups, and presenting and discussing the new methods. Well-prepared organization of these meetings during school days can ensure a very high representation of teachers at these meetings; the actual organization of teachers' meetings, which is a very important stage in the plan, can be accomplished with a high level of probability. In many cases this will lead to the probability pitfall—attributing probabilities of this event to the whole plan.

Furthermore, this probability pitfall is exploited by planners, as they tend to introduce known methods and well-defined procedures into the plan to make it more acceptable on the one hand, and to improve its implementational probabilities on the other. Practically, this is true on both counts. However, the pitfall lies in the fallacy of estimating the probability of the whole plan according to one of its well-controlled constituents.

It is very common to present plans, either in an introduction or concluding remarks with explanatory remarks. However, it was found that mentioning causality or motive tends to increase the perceived probability of an action (Tversky & Kahneman, 1983). This transpires mainly when a reasonable explanation of a target event is offered, when it appears fairly likely on its own, or when it is non-obvious, in the sense that it does not immediately come to mind when the outcome is mentioned. It is easy to recognize these as most common characteristics of explanatory remarks of many plans.

It is exactly this situation that creates the probability pitfall loop. The assumption of cause-effect relationships is an inherent characteristic of planning. The need to justify these assumptions is a political must. These justifications can take the form of explaining causes, or by including scenarios which can serve to stimulate imagination of establishing feasibility of outcomes or setting bounds on judged probabilities (Zentner, 1982), thereby existing as an important device of planning.

The use of a scenario procedure favors a conjuctive outcome produced by a sequence of likely steps. The detailed scenario, consisting of causally linked and representative events, may be conceived as more probable than its constituents or subset events (Bar-Hillel, 1973; Slovie, Fischoff & Lichtenstein, 1976; Tversky & Kahneman, 1973). One of the implications of the psychology of judgment, indeed, assumes that the conjunctions involving hypothetical causes are particularly prone to errors (Tversky & Kahneman, 1983). It is more natural to assess the probability of the effect given the cause than the joint probability of the effect and cause. In summing up this point, the very need to use various devices to explain a plan is the vehicle to the probability pitfall. Since people generally overestimate the probability of conjunctions, the more causal the evidence proposed, and the more structural the set of events, the higher the risk of fallacies.

Obviously, there is no easy exit. Plans must be well presented. Furthermore, the higher the level of uncertainty of a planning exercise, the more need and drive for explanation, and causality hypothesis, which is in fact exactly the case in most educational plans. The attempt to structure the plan, to use econometric models, to reduce its degrees of freedom, might be vulnerable to the same fallacy. The tension between over-structuralization, explanatory devices of representation

(e.g., leading to conjunctive fallacy), and the developing of an unconvincing plan is the focus of the probability pitfall, and a major challenge of educational planning.

Pitfalls of Knowledge and Information

The traditional conception of the planning process is that planning is a process of reducing uncertainty. Practically, this is done by three main methods: first, by increasing our knowledge of the relevant variables and the relationships among them, which should lead to the understanding of the internal and external forces of the issue in case; second, by organizing the variables in a pre-designed way so that they will change the situation in the desired way; and third, by establishing a control mechanism to ensure the execution of the designated way.

The search for information and knowledge is based on the assumption that there is a negative correlation between uncertainty and knowledge. The more knowledge we have about a case, the less uncertainty. This assumption might be incorrect, based on the *subjective* perception and the *cyclic* process.

The subjective perception of uncertainty dominates our set of choices. Although it is possible to assume that there will be a correlation between objective and subjective uncertainty, still they do not overlap. The question is how do the planners perceive the situation. This perception will influence the decision about information gathering. In "tame" problems and issues where the relevant variables are known, the search for information might follow a rational pattern of systematically filling the gaps of information in a predetermined frame of the variables and their interrelationships. In such cases, the type and amount of needed information can be predetermined. "Tame" problems do not mean that uncertainty is eliminated. They can only imply that the type and degree of uncertainty is believed to be known. However, the question is not only how much information, but also what type of information, and this might be derived from subjective perception of the problem.

"Wicked" problems do not have predetermined frames which might serve as a guideline to information gathering. This leads us to the cyclic process of information gathering. One way to reduce uncertainty is by bounding the problem, by reducing its variables and time space. We are "taming" the problem. For those defined boundaries information is gathered. The assumption here is that the more information we have, the more knowledgeable we become about the problem variables, and the less uncertainty we experience. However, the boundaries of "wicked" problems are arbitrary, which generally leads us to a cyclic situation. New information and knowledge puts us on the threshold of the need for new information; we are just discovering the variable chain reaction, the linkage between social problems. At this point perceived uncertainty starts to increase.

The point is that at this new stage the number of known variables with little information about them and the number of the assumed unknown variables increases dramatically. Obviously a cut-off procedure has to be established which again is generally based on setting arbitrary boundaries. We are trapped once more in a pitfall situation, the *information gathering* pitfall. If we do not stop at a particular acceptable information gap, we may enter a situation with a higher level of uncertainty. At this point we just cannot handle the amount of information, number of variables and the interrelationships among them, and we decide to stop the

inquiry. We halt, not because we do not know enough or because we know too much, but because we know enough to know that we will never know enough. Thus, the logical choice will be to stop at the narrowest acceptable information gap. However, at this point we already know that the problem boundaries are arbitrary, and that we have just found some of the variables involved, and maybe not the important one.

Let us describe a relatively simple example. A team was authorized to come up with a plan for the development of the library in a junior high school. The team divided itself into three subteams, each one concentrating on one issue: The first team handled the question of which books and how many books to purchase; the second team, how to stimulate the use of the library; and the third team addressed the problem of library shelving and reading space, taking into account the information accumulated by the first two teams.

The first team has a clear and well-defined assignment: which books and how many. One of the basic methods for gathering such information is by obtaining a list of the most common books for the 7th, 8th, and 9th grades, by having the booklist of three of the well-known school libraries in the district, by asking the teachers for their most recommended books, and by comparing the lists to each other and to the books housed in the library. How many to buy would be decided later, according to the results of the other two teams. On the surface, this part of the planning effort looks quite "tame." It resulted in a different story for the third team which reflected directly on the work of the first team as well as on the second. The first round of information was encouraging; many ideas to stimulate the use of the library were expressed, such as time, homework assignments, competition, etc. At this point, the teams approached the relatively narrow gap between what they perceived they should know and what they actually knew. However, some new questions arose. For instance, it is not only how much is read, not only what is read, but *how* one reads. And suddenly, from a relatively "tame" problem the planning team was engaged in a "wicked" problem. Why is the reading of the students insufficient and so superficial? Is it related to the teaching methods? To the home environment? Is it a function of the way books are written? The planning team was caught in a pitfall situation. All the questions were perceived as important and relevant, but they unavoidably led team members to a higher level of uncertainty which was thought to be beyond the team's capability to handle. The decision to limit the process is a frustrating one. The result might be a plan that will follow the shortcomings of the other libraries.

Indeed, the fear of losing viable information for future needs may often lead to the over-gathering and over-storing of information (Feldman & March, 1981). The "punishment" for "under-information" is always stronger than for "over-information." However, not retrieving every piece of information initially can be a virtue—keeping information gathering within reasonable bounds. The main question is, how is information organized to be obtainable when needed? This question leads us to the problem of classification.

Pitfalls of Classification

Various bits of information can be seen as objects that can be described according to their value to a known set of attributes. Each object, i.e., bit of

information, is a part of one or more sets of classes. Hence, one of the major problems of classification is to decide in which class an object belongs. We are considering pattern classification where we apply previously established rules to decide in which class an object belongs.

We can develop a well-defined system of information categorization, a well-defined procedure of translating data into information and knowledge; still, the most important source of individual differences concerns discrimination. Tidy discrimination of information, and its organization into categories are based on present perception of information needs. However, planning necessitates the anticipation, to some extent, of future information needs, though prescience cannot be expected.

Having many objects, a bank of bits of information, the problem now is to recognize from these sets of objects the pattern, which can be referred to as pattern recognition (Hunt, 1975). There is no limit to the way objects can be classified and grouped, as long as the classifications make sense and are relevant. This leads us to the process of pattern formation. The ability not to consider previously established rules of classification, which will lead to rigid classification or pattern recognition, and to formulate a new pattern, is a creative process. The tension is between trying to force new information into familiar patterns and the formation of new patterns by overlooking the well-established patterns. One way of ameliorating such tension is by moving from a single-sample classification to a sequential one (Hunt, 1975).

In classification through a single sample we recognize or even form a pattern based on one set of information. The classification role is then established and is not changed. If an error in the pattern recognition has been made, or not all objects belong to the same pattern, then they will be forced into a recognized pattern. If a school principal, for example, classifies a low rate of student-adviser meeting as a sign of a poor adviser, new information, such as the adviser's complaints about teachers, will be classified similarly, overlooking, in this case, the possbility that teachers might discourage students from going to the adviser.

In a sequence-based classification, the information drawn from the first sample is only a beginning, used to extract the first classification. Once new information is perceived, the classifying rule has to be observed and, if appropriate, a new rule has to be found, thus either recognizing a different pattern or forming a new one. Although the continual changing of classification rules is a sign of learning from experience, we are bound to have some limits to such continual change. A library, for example, cannot change its book-purchasing policies every time someone complains about the quality of a book. Similarly, a teacher cannot change the rule of grading, i.e., the rule of classifying the ways by which students attain knowledge, and consequently, classify students according to exams every time the teacher thinks he or she is wrong. However, failure to change any erroneous rule might lead to an unacceptable situation of erroneous classification. Indeed, this is an inherent tension in any information classification situation. We cannot change the classification rule whenever an error occurs, and we have to avoid misclassification by forcing objects into patterns according to wrong rules.

In complex educational issues, the problem is that objects can be classified into different patterns that produce different meanings all of which are relevant to

planning issues. Parents' involvement, for example, in educational issues can be classified as a parent support pattern, as well as a pattern of possible resistance to change, or it might be classified as a problem of organization. Each of these are relevant to the issue, although they might have contradictory implications. In such cases, we need to develop more sensitive classification criteria. But, to add complexity, the general assumption of classification that the object, the bit of information, is going to stay constant once collected, does not hold in many cases. For example, the grade distribution of the 5th-grade mathematics examinations will not change in time, but the distribution of student satisfaction from their grades might change in time. This leads to the notion of a convertible pattern for classification. However, in this case we are facing the difficulty of obtaining over time a constant meaning of the same information. In planning, as a process oriented toward the future, all our classification results have to hold over time and the methods should be applicable for the predicted situation. The danger of classification pitfalls is inherent in such cases. Future situations are uncertain, and it is almost certain that classification procedure will not yield meaningful and relevant patterns of information for these futures.

The identification of those aspects of new experiences that will be relevant in the future is a formidable task of discrimination in planning. In the highly unpredictable future in educational problems with a high level of uncertainty, one cannot know beforehand where relevant similarities for future input may lie. Thus, the ability to abstract information in such a way that will prove relevant to one's future needs can be seen as an ultimate determinant of good planning.

Summary and Conclusions

The question of pitfalls of planning addressed here touches only parts of the visible iceberg. Educational planning, as a process of socio-political communication, is vulnerable to a long list of communication pitfalls when the planning symbols cannot convey the full content of their message, and transforming their meaning is highly dependent on perceptual variability. Furthermore, the planning process itself involves the development of an interrelated frame of reference of time, space, and causality that might lead to new types of pitfalls (Inbar, 1985). There is no reason to believe that planning pitfalls are fully avoidable. On the contrary, beyond the cognitive and perceptual pitfalls emphasized here, educational planning is often based on contradictory goals and processes which are congruent with the notion of unavoidable pitfalls. However, even if it were possible, "avoidance of pitfalls guarantees minimal standards of quality, nothing more. It does not imply originality, depth, or any other of those intangible qualities that distinguish the brilliant from the merely competent study; nor can it ensure the success of the proposed solution" (Majone & Quade, 1980, p. 5).

However, the recognition and the systematic study of the pitfall phenomenon might be a very effective device in understanding the planning process, and furthermore in teaching those "essential skills which are involved in scientific, scholarly, or administrative work" (Ravetz, 1973, p. 100). Consequently, the question is not so much how to avoid pitfalls, but rather to understand their origins and to be prepared for them.

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C. Kenneth Tanner

TECHNICAL ASPECTS OF EDUCATIONAL EXCELLENCE: A DISSEMINATION MODEL FOR RESEARCH AND PLANNING

A review of the current literature reveals three distinct interactive categories of school effectiveness: 1) school climate, 2) school technology, and 3) student achievement variables. Effectiveness is most frequently measured through cognitive testing of students, although there is support for the extension of effectiveness to include the affective and human dimensions (Anwukah, 1985; Hoy & Ferguson, 1985).

Educational excellence may be defined in terms of school effectiveness, which usually focuses upon high student achievement. Effective schools have been defined in terms of special attributes such as commitment of school personnel, expectations, positive action, proactive leadership, clear focus, orderly and safe school climate, and slack time for professional development (Clark, Lotto, & Astuto, 1984). Rosenholtz (1985) defines effective schools as schools that are distinctive in important ways. Vincenzi and Ayrer (1985) define an effective school as one that performs better than expected given its socioeconomic level. From these recent contributions in the literature, we may conclude that the definition of an effective school is relative—relative to any given writer's biases and to the existing values of the school organization at the local and state levels. Hence, there exists a high degree of disarray in the literature concerning school excellence.

The purpose of this article is to report a critical analysis and experiential test of a proposed school effectiveness model, with emphasis on the technological components currently associated with educational excellence. Another purpose of this report is to stimulate thinking of alternative research-based approaches for planning and implementing educational practices. The investigation reported here was made under the assumption that the technological aspects are or will soon become a significant part of the arguments for an interactive model of school effectiveness such as the one initiated by Murphy, Hallinger, & Mesa (1985). The variables pertaining to school technology formed the unit of analysis and were critically analyzed for their comprehensiveness as a guide for planning for educational excellence. Based on the analysis of the arguments presented in the literature and comparison with other recent and significant developments in the areas, an extension of the developing model for improving student outcomes is presented.

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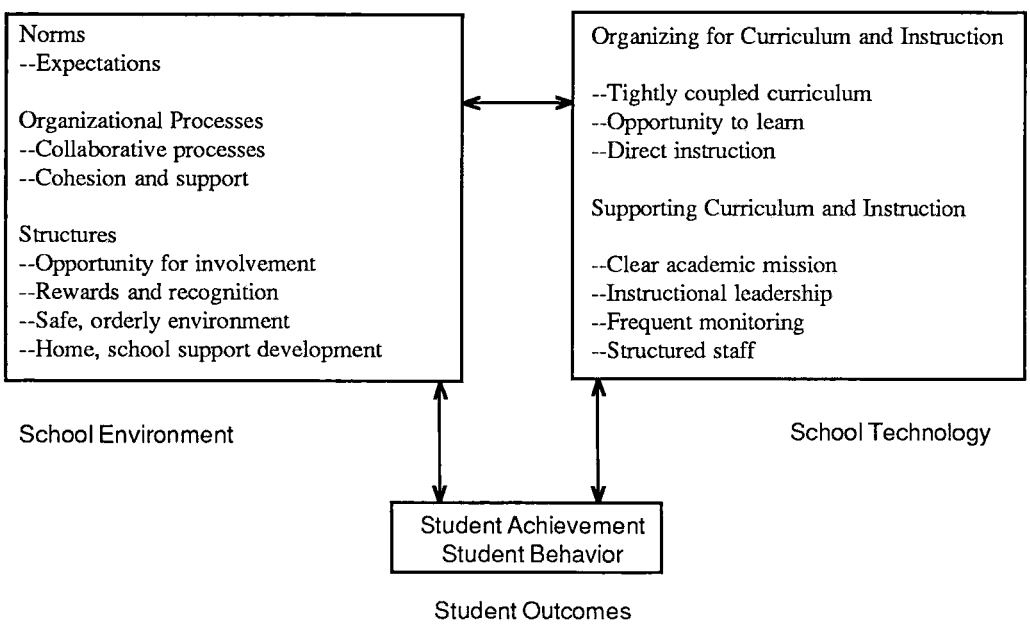
Context

Upgrading the quality of schools was the major thrust of research and development prior to the 1960s. The report by Coleman and his colleagues (1966) started a trend toward the use of student achievement as a significant outcome measure, the analysis of school processes, and attempts to show that schools do make a difference. The early impulse behind the study of effective schools was to improve student academic performance in low income, largely minority schools (Cuban, 1984). Research on teacher effectiveness in the late 1970s and early 1980s appears to have set the stage for a conceptual framework for school effectiveness (Murphy, Weil, Hallinger, & Mitman, 1985). This movement, influenced by commissions and other study groups in the early 1980s has spread across the United States in forms of teacher and administrator testing, increased course requirements, extended school hours, and legislation designed to reach the huge goal of educational excellence.

One promising school effectiveness model proposed by Murphy, Hallinger, and Mesa (1985) builds upon earlier conceptual frameworks such as that proposed by Anderson (1982). The Murphy, Hallinger, and Mesa model as shown in Figure 1 identifies seven interactive sets of variables pertaining to school climate and technology that influence student achievement and behavior (outcomes). The three major divisions are also inherently interactive.

Figure 1
School Effectiveness: A Model[a]



[a]Reprinted by permission from Murphy, J., Hallinger, P., & Mesa , R. P. (1985). School effectiveness: Checking progress and assumptions and developing a role for state and federal government. *Teachers College Record, 86*, 620.

An Overview of the School Effectiveness Model

School environment variables are classified as norms, organizational processes, and structure. Norms are defined as high expectations for students. Collaborative organizational processes and student and staff cohesion and support comprise the organizational process component. The school environment structure provides opportunities for student involvement, widespread rewards and recognition for students and staff, a safe and orderly learning environment, and a high degree of parent involvement and support.

The interactive dimension of the model suggests multiple communication flows among the three main divisions of the model. Organizing for curriculum and instruction and supporting curriculum and instruction are the two classifications of the technology variables.

Organizing for Curriculum and Instruction

The concept of a tightly coupled curriculum suggests that the effective school has a high degree of specificity concerning objectives, curriculum materials, instructional strategies, and testing instruments. These are all in alignment.

The curriculum is organized so that the student is exposed to more content and spends more time in class and on homework in the effective school. Proponents of the educational excellence movement contend that a high success rate characterizes effective schools. More research must be completed on all the variable sets, especially the time on task element for example, since the argument for time on task has not been fully substantiated (Arlin, 1984; Peterson, Swing, Stark, & Waas, 1984).

The interactive model for effective schools entails the use of teacher-directed instruction and ample monitoring of student activity. Monitoring is to be utilized to provide frequent progress information to the student, teachers, and parents.

Supporting Curriculum and Instruction

Support of curriculum and instructional activities is guided by a well-defined academic focus and program mission. Mastery of the basic skills is a top priority outcome.

Instructional leadership is seen as the key ingredient of effective schools. Hence, school principals and assistant principals are charged with informing the school clients and staff of the school mission, goals, and objectives and evaluating progress toward the attainment of these program expectations. This is perhaps a new role for many school principals.

Frequent monitoring of student achievement and progress is an integral element of the model. Information gained through monitoring activities is used in planning the total school program. For example, curriculum changes are influenced by the frequent monitoring of student progress, which is then related to teacher and administrator accountability.

The seventh school technology variable set includes staff development programs. Structured staff development revolves around the concept of collegiality or sharing of authority and responsibility. This element affects the assessment of mission, goals, and objectives and proposes to facilitate program delivery. Other significant work has already begun on the staff development

element. For example, conceptual dimensions defining an interactive component for school programs have been suggested by Wang and Walberg (1983).

Other Related Literature

Rosenholtz (1985) developed a theoretical context with which to understand better the evidence on effective schools. The concept of a tightly coupled curriculum as a characteristic of an effective school was supported. Goals on paper as opposed to operational goals were, however, of concern. That is, Rosenholtz advanced the notion that ineffective schools operate under a set of goals that differs from the professed goals. She concluded that ineffective schools operate under a loosely coupled curriculum.

Regarding the school technology variable, instructional leadership, Rosenholtz advances the notion that effective school prinicipals convey confidence that teachers can improve student performance and students are capable of learning. Ineffective instructional leaders, on the other hand, are uncertain that changes in student performance can be achieved. Ineffective principals vilify students and teachers as culprits when students fail to make academic progress. The ineffective principal believes that it makes no sense to set academic goals if students and teachers are incapable of reaching them.

Finally, Rosenholtz proposes a schematic representation of school excellence. She contends that school excellence lies in the direction of rational planning and action where principals, because of their certainty regarding goals and procedures, mobilize teachers against a single common enemy—low student achievement. The effective school is characterized by congruent staff and organizational goals, actions that contribute to the attainment of goals, and power to produce teaching technologies that are passed along to other teachers. These variable sets parallel the tightly coupled curriculum, clear academic mission, and instructional leadership components proposed by Murphy, Hallinger,and Mesa (1985). The distinct difference between the concepts of the two works is that Rosenholtz focuses on teaching in elementary schools serving poor minority students. Her findings may not generalize to other generic classes.

Additional research on school effectiveness models has been completed by Hoy and Ferguson (1985). They have proposed a model to determine criteria of effectiveness. Their model is based upon works by Parsons (1960), who postulated that a social system's survival depends upon adaptation, goal attainment, integration, and latency.

Adaptation is viewed as the problem of accommodating the environment. Organizational effectiveness assumes successful adaptation of innovations. Thus over a short term, administrators and teachers adapt to a given innovation. Organizational adaptability is measured in terms of innovativeness and flexibility of teachers and administrators.

Effective school organizations are successful in setting and accomplishing goals. Student academic achievement is the most commonly defined goal for effective schools. Goal attainment is defined as the problem of setting and achieving goals.

The problem of maintaining solidarity among elements of the school system is specified as integration. Integration is evaluated by faculty cohesiveness,

cooperation among faculty and administration, and satisfaction of organizational tasks and personal needs. Effectiveness demands organizational cohesiveness in the form of the absence of intraorganizational conflict.

Latency is the problem of creating and maintaining the system's value and motivational patterns. It is evaluated through measuring faculty commitment to the school. The central question is: Are the teachers committed to the mission, goals, and objectives of the school?

After applying the model to seven schools as a research guide, Hoy and Ferguson noted that although the empirical analysis of the model was reasonably successful, the model was only partial and should be expanded. In addition to cognitive dimensions, they suggested expansion to include affective student outcomes such as self-concept and social and emotional development. They also recommended the inclusion of more student input as well as more objective measures including additional achievement tests, and turnover and absentee rates. A long-term as opposed to a one-shot evaluation was recommended. Although their work is in the school climate dimension of the Murphy, Hallinger, and Mesa contribution, it does parallel the notion of a tightly coupled curriculum as defined in the school technology component.

Perhaps the most significant part of the Hoy and Ferguson report is their indication of the need to refine effectiveness models. They call for a standard set of operational indicators beyond the four tested (eg. innovation, academic achievement, cohesiveness, and organizational commitment). They warn that the current disarray of effectiveness research should yield to more systematic and cumulative efforts. This would enable researchers to conduct comparative analyses of effectiveness. They suggest expansion to determine the effectiveness of structure, technology, environment, culture, decision making, and leadership.

Given the exceptionally well-prepared research and articles reviewed here, it is apparent that the Murphy, Hallinger, and Mesa model for school effectiveness is highly compatible with the current thrust toward excellence. We might add awareness of the affective domain of student outcomes to the student effectiveness component. The review of literature supports this addition and interaction among the three major classifications.

A Test for Logical Structure

The above review generally supports selected components of the Murphy, Hallinger, and Mesa (1985) model. Nevertheless, to ensure a valid and reliable extension of their model, the question of logical structure should be addressed. To accomplish this important activity in model development, let us now assess the structure through a policy analysis technique under the assumption that the model will influence school effectiveness research, policy, and program development and implementation. Hambrick and Snyder (1976) offer a test having five parts (underlined below) to answer the question of logic. The results are presented in the following paragraphs.

The current prototype is an attempt to convince others of the merits of a particular position and represents an argument for what is currently perceived to be an effective school. Hence, it presents *a course of action*. For example, the school

environment should contain a sense of high expectations, foster collaborative processes and provide cohesion and support, and offer a structure for the opportunity for involvement, rewards and recognition, and home support for the school. Achievement and mastery of basic skills are indicated as a course of action in the school technology segment.

Are *benefits of the action* spelled out? The answer is "yes, in general." One benefit is a safe and orderly environment. Hence, "Effective schools are characterized by learning environments that are safe and orderly without being oppressive and by physical environments that are clean and well maintained" (Murphy, Hallinger, & Mesa, 1985, p. 621). The benefits of the action and the desired consequences are outlined throughout the school climate component. The central theme in the school technology component is high expectations for students.

The most sensitive parts of the test for logic are the *value statements*. In educational research, dealing with facts at the expense of value is the rule rather than the exception, but research hypotheses formulated without the application of someone's value are significantly scarce in all educational research. Nevertheless, the component of the model under study is founded upon the notion that actions at the school are designed to create a favorable school climate, which in turn promotes achievement of desired outcomes through the technology component. The use of the word "effective" implies the expectation that something is going to get better, or that a desired result is certainly a value judgement. There is nothing wrong with value statements, however, in presenting a logical model that may influence educational research and program design.

According to Hambrick and Snyder (1976), *external impact* (step four) is important since actions based upon the model can, and indeed are likely to have secondary consequences that surpass the goals and objectives of the stated course of action. Thus, the implementation of the model is likely to make things happen which were not intended (good or bad) and are distant from that problem which the model is supposed to address. External impact, especially the possible negative consequences, is not addressed. External impact should receive serious study in the design of any model. For example, will high expectations for student achievement significantly influence student and staff stress? Will increased demands on teachers for monitoring of student outcomes increase the level of stress?

If the model is to be persuasive, it has one more hurdle. It must consider the possibility that there is a better, cheaper, or more effective way to achieve the same thing—school effectiveness. Thus, *comparative parameters* are needed. The role of the comparative segments is to counter at least the more obvious alternatives to the proposed course of action. Usually, the most obvious alternative is to do nothing. In the case under study, let us assume that the model is strong enough to be compared with other conceptual frameworks such as goal models (Hoy and Miskel, 1982) and systems models (Kaufman, 1972). Because the school climate and technology components are interactive with student outcomes, a comparison could be made with system or goal models or other interactive models yet to be designed. Nonetheless, there exists a lack of systematic comparative elements in the currently proposed model.

The lack of acknowledging external impact and failure to make comparisons is also a clear weakness in literature presented by the Commissions and research groups that kindled the current surge in the school effectiveness movement. According to Peterson (1983) of the Brookings Institution, the outpouring of the commission and task force reports has had a profound effect upon the national education debate, but the reports themselves, upon close examination, prove to be disappointing, when judged by methods used to evaluate a policy analysis. He argues that "they (the reports) reassert what is well known, make exaggerated claims on flimsy evidence, pontificate on matters about which there could scarcely be agreement, and make recommendations that cost too much, cannot be implemented, or are too general to have any meaning" (p. 3). Whether we agree or disagree with Peterson's argument, the school effectiveness trend (perhaps a fad) is rapidly growing as evidenced by the current literature.

One reason for identifying weaknesses in models of school effectiveness is to encourage corrective and refinement measures prior to using the models as implementation guides and for research, evaluation, and program design. As Murphy, Weil, Hallinger, and Mitman (1985) state "In general, nevertheless, this area (model development) is not well explored, and the development of models and their testing remain tasks for the future" (p. 362).

Further Testing

In order to further thinking toward expanding and designing alternatives for planning and constructing additions to the interactive model, let us turn to the classic contribution by Quade (1979). His work on the analysis of models poses four questions (p. 156) directly relevant to the effectiveness model suggested by Murphy, Hallinger, and Mesa (1985):

1. Can the model describe correctly and clearly the known facts and situations?
2. When the principal parameters involved are varied, do the results remain constant?
3. Can the model handle special cases in which there is some indication of what the outcome might be?
4. Can it assign causes to known effects?

The interactive model does account for the known facts and situations in many cases as evidenced by research cited in its rationale. It is weak from the standpoint of indicating consistent results when principal parameters are varied, however. For example, does more time in direct instruction ensure continued student achievement? As noted earlier, this area needs a firm research base (Arlin, 1984).

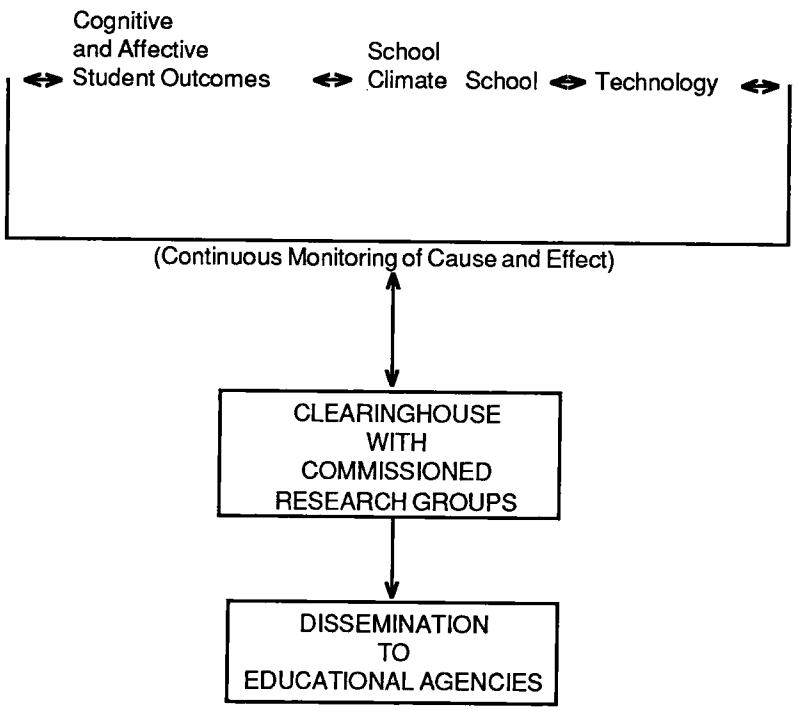
The third question might lead us to consider what will happen in the special case of the slow learner where high success rates are expected. Although the model is proposed to be interactive, the special case and causal aspects are, indeed, most suspect. Future refinement under the conceptual guidance and through testing such as that proposed by Quade should be able to address the issues of causality and special cases.

When concerns as proposed by Quade are met with research-based developmental activities, we can at that time say interactive models such as proposed by Murphy, Hallinger, and Mesa are sound. Their model certainly has a

start toward that goal. Given the current thrust toward school effectiveness and the emerging research and literature, the working prototype shown in Figure 2 is recommended.

The extended prototype mandates methodology to facilitate systematic research and to enhance the management of studies and dissemination of findings. Systematic research entails the proposal of relevant research questions. Systematic research implies appropriate design, analysis, and interpretation prior to dissemination. Dissemination as defined in the new proposal must be rapid. Research results must, without question, be delivered to other researchers and especially practitioners in terms that they understand whereby proper implementation of findings can occur.

Figure 2
An extended interactive and research-based prototype of school effectiveness



The extended interactive and causal prototype of school effectiveness is based upon works cited earlier in the article. The results of the research-based and experiential tests according to Quade (1979) and Hambrick and Snyder (1976) support the need for specifying cause and effect dimensions. The dissemination dimension is inherent. The student outcome element is expanded to both cognitive and affective variable clusters (Hoy & Ferguson, 1985). A commissioned

research group (perhaps assigned by a national research association and financed by foundations) is proposed as means to influence consistent and comparative research. This organizational configuration would combat the disarray of effectiveness research as noted by Hoy and Ferguson (1985).

Under such a system, cumulative research efforts might rapidly influence the deletion or addition of interactive variables within each of the three clusters. Significant and consistent research on the investment of time as related to learning such as that reported by Arlin (1984) might lead to the alteration of educational programs. Such program structure change, for example, might dictate less time on task for more intelligent students, while the converse could be true for the less intelligent or handicapped student.

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The method of disseminating the results of the cause and effect studies is a major strength of the proposed framework. The most effective way to disseminate significant information based upon sound causal research is through a strong, unbiased organization serving as a clearinghouse. Obviously, in the rapidly expanding world of technology, we would expect a major part of the dissemination to be through satellite and computer-linked transmission to diminish the lag-time between completed research and initial phases of the implementation of findings. The commissioned research groups would simply store their works electronically. These findings would be instantly retrievable by schools and other educational agencies as printed materials or through audio and video transmissions. All transmissions would include only synthesized and strictly monitored research.

The major difference between the extended prototype as shown in Figure 2 and earlier versions of models for effective schools is the attention given to the *continuous monitoring of cause and effect relationships* by unbiased research groups and the *dissemination* (a system more sophisticated and research specific than ERIC and the National Diffusion Network) of results. The extended prototype could accommodate research proposals (commissioned by the research groups to universities and other independent research organizations), both qualitative and quantitative, such as those recommended in the next section.

Research Questions on Planning for Excellence

Student outcomes are the foci of the extended prototype of school effectiveness. Further research, based on ideas such as those presented by Kaufman (1985) regarding organization and performance, is needed as an integral part of organizational performance. Curriculum development and research models as proposed for teacher education by Anwukah (1985) are needed to address the conceptual, technical, and human dimensions of the school effectiveness concept. An integrative, causal-modeling approach as discussed by Wang and Walberg (1983) represents a comprehensive approach to modeling program design and implementation complementary to ideas here.

Implementation of findings from conceptually sound models that have been monitored for cause and effect relationships regarding the dimensions of the proposed interactive prototype might entail the following basic considerations: Reading achievement, mathematics achievement, and other relevant areas of academic achievement (cognitive measures), plus self-concept, social and emotional development and other measurable outcomes (affective outcomes). Relevant research questions regarding school technology as illustrated below must be included in planning for educational excellence:

1. Are the academic mission, goals, objectives, and curriculum complementary? How do they cause the desired cognitive and affective student outcomes?
2. Is instructional leadership needed at the building level or is it best accomplished at a higher level in the school organization?
3. How does instructional leadership at the school building level compare with instructional leadership at a higher level when cognitive and affective student outcomes are compared?
4. Does teacher and administrator accountability (the passing of additional tests after graduation from college, for example) cause desired cognitive and affective student outcomes?
5. Is there a significant effect upon student achievement in schools where the staff makes significantly high scores on mandated certification and competency tests?
6. Are test designers dictating the school curriculum or is the curriculum dictating the tests?
7. Is there a need for both school personnel testing and certification?
8. How does structured staff development influence student cognitive and affective outcomes?

These 8 general areas regarding the school technology component may be expanded to hundreds of research hypotheses regarding the cognitive and affective aspects of student outcomes. The cause and effect between school climate and the other variables must also be considered. Research must not only focus upon short-term (one-shot) studies, which is the major limitation at present, but also on intermediate and long-term efforts to plan and design effective schools.

In addition to the suggested research questions above, we might consider answers to questions such as: What will happen to students who are constantly put under stress at school and at home? What will happen to young people who work 30 hours per week at school and spend 20 hours per week on home assignments? Is academic work more taxing than physical labor? If so, whatever happened to child labor laws? With no time to play, Jack and Jill may become very dull and perhaps need psychiatric treatment to survive the current disarray of activities now prevalent in the school effectiveness movement.

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Grover H. Baldwin

PLANNING FOR GOAL IDENTIFICATION AND ATTAINMENT THROUGH STRATEGIC MANAGEMENT

In the mid 1970s, private sector corporations found that their long range/strategic planning technologies failed to forecast the changes in the environment. Ansoff (1977) deduced that this lack of success was attributable to the emphasis placed upon preconceived notions and directions of the planner and upper level management, the time-consuming nature of strategic planning, and its costly and cumbersome nature that did not permit response to the rapid changes in the environment. Departing from the linear long-range planning mode, these organizations adopted a more adaptive form of planning that was closely linked to a newer, broader view of management responsibility, that of strategic management (Chaffee, 1985).

School districts also have been thrust into a turbulent environment. Joining changing trends in planning, they adopted long range planning models. However, school district management tends to the status quo, and thus these organizations failed to perceive those weak signals that harken the demands for change. If adequate time had been available, the organizations would have been able to respond proactively rather than reactively. The need for proaction calls for mechanisms that permit (1) rapid response to weak signals, (2) incorporation of the recognition of these into the organization's planning structure, and (3) assistance to the organization to fulfill its mission.

Like private sector industries, public school districts need to think through both their planning process and their management process. The nature of these organizations has changed. Failure to recognize these changes, and the need for a different management style, will cause further damage to school districts. Similarly to the private sector, school districts need to examine the processes found in strategic management and adapt and adopt these concepts to better manage their operations. It begins with strategy. Andrews (1980) defines **strategy** as

> [D]ecisions . . . that determine and reveal objectives, purposes, goals and produces the principal policies and plans for achieving those goals and defines the range of business the company is to pursue. (p. 19)

The essence of strategy is the pattern, the unity, the coherence, and the internal consistency that is developed to achieve the mission of the organization in an effective and efficient manner (Untermann & Davis, 1984). Strategy is a dynamic ongoing process that permits the organization to anticipate and respond to

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changes in both the internal and external environment. It is bound up in the total management of the organization, its strategic management.

Strategic management is

> establishing and maintaining a set of relationships between the organization and the environment which (a) enable it to pursue its objectives, (b) are consistent with the organizational capabilities, and (c) continue to be responsive to environmental demands. (Ansoff, 1972, p. 5)

Strategic management extends beyond the mere planning and formulation of mission/goal/objective to concern itself with the organizational capabilities, the resource allocation, and the control mechanisms needed to fulfill the organizations mission. Strategic planning is part of that process.

Strategic planning is a

> rational analysis of the opportunities offered by the environment and of the strengths and weaknesses of the firm and the selection of a match (strategy) between the two which best satisfies the objectives of the firm. (Ansoff, Declerck, & Hayes, 1976, p. 44)

However, it sometimes occurs that strategic planning is either completed in isolation of the demands of the environment or completed irrespective of the capabilities of the organization. This is where the management process breaks down and where the weaknesses of strategic planning are noted (Nathason, Kazanhian, & Galbraith, 1982; Starbuck & Hedberg, 1977).

The ability of the organization to use weak signals to plan effectively is a step toward the successful accomplishment of its mission. Within the external environment the changes that are demanded are not only "weak" in their initial demands, they also encompass greater novelty of change, intensity of change, are occurring at an increased rate, and are part of the growing complexity of the environment that yields less time to react and the need for a more proactive and creative stance (Ansoff et al., 1976). For the organization, the issue is one of time and the organization's ability to increase response time to respond to the threats/opportunities found in the external environment (Hofer & Schendel, 1978). This is where the component parts of strategic management interplay. Such a change in management approach requires movement to an evolutionary, yet revolutionary, managerial style. This style need not be dramatic, or it need not entail the destruction of the total organization, or the reconstruction of the organization from its basic elements (Ramaprasad, 1982). Revolutionary change may be appropriate in given circumstances, but, to be most effective, the change should be evolutionary (Curtis, 1983).

In achieving a more effective organization, it is the role and responsibility of management to encourage the changes needed to accomplish this task. Top management must overcome the reluctance to change and recognize the need to

restructure and redefine the mission of the organization (Chakravarthy, 1982; Starbuck & Hedburg, 1977).

Key to organizational survival is the fulfillment of the appropriate mission of the school district. Thus, it is important to determine and reaffirm honestly, on a regular basis, the mission of the organization. In clarifying the mission statement, we give the reason for the organization's being, its essence (McMillan, 1983). To achieve adequately the mission statement of schools, three distinct questions must be answered: What is the present purpose of the organization? How will the future impact on the organization and its mission if no changes occur within the organization? and the normative question, What should the mission be? (McConkey, 1981)

With the answers to these questions, districts can make the strategic choice(s) to fulfill their mission. As Ansoff (1979) indicates, the strategic choices for the organization are made through the "interaction of groups and individuals who have distinctive preferences and power to support these" (p. 105). Thus, the analysis processes involving both the external and internal environment are extremely important.

External Environment Analysis Processes

The external environment analysis provides an understanding of the clientele the districts are serving and will serve. The primary analysis completed under this area is environmental scanning using an environmental threat and opportunity profile, including an enemies check, and stakeholder analysis (Curtis, 1983; McMillan, 1983; Rowe, Mason, & Dickel, 1980;). These analyses provide data from which the management of the organization can make rational and logical decisions. While decisions are not based solely on quantitative measures, these data assist the manager in rendering effective decisions. Questions to be answered by these analyses consider the past, present, and future. This alone stretches the planning process beyond the traditional planning modes found in education.

Questions about the *past* include such areas as main forces that impacted on the organization in the past and the most fundamental changes that have occurred in the environment of the organization. Questions about the *present* concern the current position and status of the organization in the external environment, level of support in the current environment, and the current status of competitors of the organization. Questions about the *future* examine issues about the fundamental forces that will impact on the organization, the effect these forces will have on competition, and the requirements for future success among stakeholding publics. All these answers lead management to identify the opportunities and threats that face the organization and impact on its mission and its choice of strategy (Andrews, 1980; McMillan, 1983).

Environmental Threats and Opportunities Profile (ETOP)

ETOP scanning is a quantitative decision-making process that permits (1) the review of the environmental factors and (2) the monitoring of the importance and potential use of that threat or opportunity. Traditionally, ETOP has involved itself with six specific areas: economic, political, social, technological, competitive, and geographic.

Economic Factors. Here the manager is concerned with the trends, demands, and resources available to the organization and the environment it serves. For instance, in the area of trends for school districts, managers must understand the impact of inflation and unemployment on the area. Weak signals need to be monitored and the managers must be in contact with organizations such as the Chamber of Commerce and Industrial Development Commissions as they can provide information about the potential for private sector firms in the area. This gives indications of the growth and decline that affect the school district.

Political Factors. The political factors include power, ideological differences, interest groups, legislation, and regulation. While school district managers have traditionally addressed some of these areas—interest groups, power, legislation, and regulation—the area of ideological differences is one that bears closer scrutiny. With the changing social philosophy across the nation,and the exposure particular ideological groups are receiving, these differences impact on the present and future status of the local district.

Social Factors. These factors involve the issues of age, geographic and income distribution, education level, and family values. While management has used information about these areas for planning purposes, further attention must be given these areas, as the answers to questions of impact on the past and forecasts of future impact will be significant.

Technological Factors. With the rapid advance of technology, school districts find themselves responding to the demands for additions to programs, new programs, and training both clients and staff in their use. Concern here is that the manager be versed in the latest programs, their life cycles, and the exit barriers a district may face if it needs to cut a program.

Competition Factors. While local districts are concerned with public dissatisfaction, the competition and enemies check now includes private schools, home instruction programs, the success or failures of neighboring districts, and the overall performance of the student body.

Geographic Factors. These factors include school locations, transportation, and location of patrons/students. While school managers have considered this information before, it is now important to grasp the implications of weak signals in this area, especially when this information is coupled with the other five areas.

The use of ETOP forces the school manager to be proactive in understanding the environment and becoming attuned to the nuances and weak signals that affect the district. Through the use of a matrix measuring the impact of each factor, the importance of the factors, and the final assessment of the potential threat or opportunity, the school manager has information necessary for making mission, strategy, and programmatic decisions.

Stakeholder Analysis

Freeman (1984) suggests that another element in using strategic management in the planning process is stakeholder analysis. There are two distinct stakeholder analyses (external and internal). We will concentrate here on the external analysis.

The external stakeholder analysis is concerned with five questions: who, what, how, where, and why. First, who are the patrons of the district that need to be

satisfied? Who uses the services of the district, and what impact do they have on district operation? Who does not use the services of the district, yet supports the district in its endeavors?

Second, what do the patrons/students seek? What factors influence their choice of this versus other educational options they might exercise? What function does the district serve for these people? What important criteria and demands do these patrons have? What risks are the supporters willing to endure in terms of programmatic changes? A second major set of "what" questions concerns the operating assumptions of the external stakeholders.

The third set of questions asks "how" the school organization affects the lives of the patrons. Specific answers needed include how patrons use district programs, services, and opportunities; how the programs and services affect the lifestyle of the patron (a value added notion); and how much the patrons are willing to pay (either in taxes or in user fees) for the services.

The "where" questions are concerned with such items as where patrons receive information concerning the district and where the decision is made to use the services of the district as opposed to other options. Knowing who the influential stakeholders are in the decision-making process helps supply these answers.

Lastly, are the "why" questions. Why do patrons use the services offered by this district? Why not some other district or agency? While simple enough questions, they present the opportunity for a considerable amount of analysis in terms of the support, stability, upheaval, and general tenor of the district. Attention to weak signal responses yields data for both mission and strategy choices.

Internal Analysis

The strength of strategic management lies in the internal analysis of the organization and the match between the organization's capabilities and the mission of the organization. Too often, school districts accede to demands of special interest groups and add programs. The internal analysis of the organization's capabilities, and the subsequent match of these capabilities to the mission via strategy choices, afford school managers the opportunity to fulfill the realistic and primary mission of the district.

The internal analysis of the district produces a district capability profile. This occurs through an analysis of the weaknesses, opportunities, threats, and strengths (WOTS-UP) analysis of the organization.

WOTS-UP Analysis

This analysis looks at the internal environment of the organization in terms of its organizational considerations and, in particular, the managerial, financial, and technical positions of the district. Analysis is conducted to render a true picture of the organization and its ability to meet the challenges presented in the external environment analysis.

Financial and Technical Concerns. The *financial* aspect of this category considers the information about the access to funds and funding sources, the allotment of funds from the legislature initially, and then the budgeting process at the local level. The *technical* aspects of this category are concerned with resource utilization by the management units within the district and the district as a whole.

This resource utilization concerns both material items and personnel. While both of these analyses are important, concern is more appropriately placed in the managerial and organizational considerations of the district since education is primarily people-centered.

Managerial Concerns. There is a need to develop individuals who are more anticipatory, exploring and creative in their approach to the process of managing the district. Specifically, managers in school districts need to adopt an entrepreneurial stance that allows them a more proactive role within the organization. Key to this is the understanding of the role of the district's management and their ability to foster an environment that permits proaction.

In the analysis of managerial capabilities, emphasis is placed on the skills needed to serve as strategic managers. Specific skill areas of problem-finding and solving, leadership, decision making, the ability to manage process, the capability to use management science techniques and management systems to affect change in the organization, and the ability to forecast and foresee the future (Ansoff, 1976; Rawls & Rawls, 1976; Starbuck & Hedberg, 1977). Knowledge and ability to use various management science and management systems techniques in the analysis and decision-making process is important for the effective strategic manager. This includes the capacity to synergize discrete bits of information and produce new futures and new means to fulfill the mission given the resources and other capacities of the organization. Skills include the ability to evaluate programs and their life cycle.

Another aspect of the managerial skills/capabilities are the personality traits of the manager. Specific traits need to be assessed in the managers and, if missing, acquired either through hiring new personnel or through management development programs. These traits include flexibility, risk-taking capacity, decisiveness, optimism for the future, persuasive ability to encourage change, emotional stability, and high tolerance for ambiguity (Rawls & Rawls, 1976).

Lastly, the managerial capabilities profile seeks to establish the ability of line managers to fulfill actively the strategic management and strategic planning functions at the building level. Planning was once the domain of a separate unit within the organization that dictated plans and was not concerned with implementation. Now, the private sector is eliminating planning units and returning these responsibilities to the line managers. Schools should consider similar action.

Organizational Considerations. In the organizational consideration section of the WOTS-UP analysis, the level of concern centers on the structure, personnel, power, politics, and climate within the organization. While weaknesses will be noted within the analysis, the strengths are the important part. As Andrews (1980) states, "The distinctive competence of an organization is more than what it can do; it is what it can do particularly well" (pp. 66-67).

In the area of the structure and climate of the organization, questions center on the flow of communication and information, the flatness and peakedness of the organization, the sense of ownership on the part of professionals to the organization and its programs, the power and involvement of individuals in the decision-making process, and the recognition of the mission of the organization. In the area of personnel, questions center on the personalities of the various faculty and staff, their compatibility, their willingness to serve, their capabilities, strengths,

and areas of expertise that may be tapped or expanded through development programs, and their ability to cope with ambiguity, tolerate change and flexibility, and foresee means to overcome the turbulence within the organization created by the external environment.

Lastly, the area of power and politics calls for management personnel to assess the internal workings of the organization. Research findings indicate the importance of knowing the formal and informal power of individuals and subsets within the organization (Dahl, 1961; Hunter, 1953; Kimbrough, 1964). Now, the effective employment of strategic management makes this knowledge of organizational capacity critically important. The results of the assessment for this area determine the capacity of the organization to respond to the external environment.

Applying Planning Data to Strategies

The above calls for school managers to enhance the planning process by giving attention to the weak signals within the external environment and internal capabilities of the organization. Once the information has been gathered, the manager selects the strategies the organization will follow to fulfill its mission.

In selecting the strategy the organization will follow in the financial, production, and marketing areas, management must choose between the different options. This choice is facilitated by a strategic issue analysis (SIA) process that has superseded strategic planning and overcomes its weaknesses. The SIA process is an opportunistic approach that allows for quick responses to the turbulent environment and a results orientation for the institution (Ansoff, 1977). Preference for particular strategies the organization uses to achieve its mission are continually evaluated for their consistency with the mission of the organization. Failure to evaluate these in relation to the internal and external environments creates the aura of stodginess and resistance to change. Constant vigil must be maintained and responsiveness to the weak signals of the external environment must be part of the management process in the turbulent environment.

Strategic management has been stressed as the more effective means to achieving the mission of the organization. Long range planning, and even strategic planning, proved effective in the past when the environment was stable and when there was adequate time to respond to changes. Current turbulence and a shortened response time demand that managers adopt different processes. It is through the processes of strategic management that the planning mode of the school organization can more accurately identify and attain its goals via the matching of the demands of the environment with the capability of the organization.

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Anita Nazareth

THE ECONOMIES IN CURRICULAR CHOICE (ECC) MODEL

Introduction and Background

In **developed** countries, considerable attention has been devoted recently to the cost of curricular options. The U.S. Commission on Excellence in Education described the curricular situation as being analogous to a "cafeteria" where students could eat dessert before or even instead of the main course (National Commission on Excellence, 1983). Such a situation was described as costly from two points of view. Philosophically, it implied that there was no order to priorities in knowledge or to hierarchy of skills. Economically, it meant that there was no ceiling on that which the school could be expected to pay.

This cafeteria-like situation emerged from the post World War II period of abundance—rapid economic growth, rising school revenues, a growing youth population enrolled in school, and ambitious notions about the nature of knowledge. Since no knowledge or any educational experience could be shown to be useless, it was considered appropriate for schools to provide as wide a variety of subjects as possible. It was, after all, educational.

Now this is changing. The trend in the United States is to limit the range of curricular options and similar trends are being observed elsewhere in the Organization for Economic Co-operation and Development (OECD). Student enrollments have fallen and schools are applying a hierarchy to learning once again, e.g., science and mathematics are required before a student is allowed to take driver's education or basketball.

The role of the school in **developing** countries is more demanding. Schools are expected to compensate for more extreme deficiencies in educational experience. In developing countries, the typical student's home has few books and is without newspapers or television. The typical student is generally not exposed to libraries or films. Educators have acknowledged this environment of poverty and have required schools to perform a wider service than normal. This has caused problems of two kinds—a curriculum which is overly broad and subject matter which is too detailed to deliver with the available facilities.

Though the national economic prospects obviously present serious constraints, the variety of subject matter within the education curriculum has not yet been a subject of debate. Developing countries, excluding Japan[1], naturally wish their school children to have as many opportunities for learning as do children in OECD countries. Sri Lanka, Tanzania (Psacharopoulos & Loxley, 1986) and Malaysia for example, have ventured into diversified curricula. Specialized facilities, equipment, and furniture are needed to support this diversified curricula which may double the unit cost of secondary education.

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These cost implications have generally been realized *ex post facto* as a surprise to educational planners. There has been no tradition for costing of curricular choice. Substantial attention has been devoted to student unit cost, flow and output, school location planning, and the cost of various types of school construction. Computer models have been developed to manipulate these variables. They have typically included student/teacher ratios, school size, teacher salary determinants, number of years of schooling, and the like. But these programs have considered curriculum as a fixed input, not subject to economic analysis or to policy manipulation. This has been true for two reasons.

First, equipment and facilities can often be shared among a number of subjects within a curriculum. Teachers can be expected to teach a combination of subjects rather than specialize in one particular subject as in the case of science or literature. Since this sharing of facilities and teachers can be idiosyncratic and vary widely among countries, generalization becomes difficult. It is hard to isolate data on a subject-by-subject basis and apply it to findings outside specific locales.

Second, economists have relegated curricular decisions to the educators for normative reasons, i.e., on the grounds that "professional opinion" ought to govern educational content. If educators believe that a "well rounded" education consists of X, then the content of education should consist of X. Economics in education has been confined to estimating the cost implications of X, the potential returns to X, and various planning issues surrounding X, such as teacher training, student/teacher ratios and other logistical points. But, it has never questioned the component parts of X.

This is now changing. Two decades of economic development experience have shifted the opinion of educators. In the 1960s "hands-on" experiential learning was popular; now it is popular to emphasize its opposite—the virtues of deduction, short-term (rote) memory skills, and logical structure. It was also fashionable to argue for student choice on educational grounds; now it is fashionable to argue for its opposite—the limitation of student choice on educational grounds. Such shifts, and the fact that whichever direction is chosen has substantial economic implications, have led to a demand for more cost information available *before* deciding on one or another education strategy (Thomas, 1975).

The ECC Model

The Economies in Curricular Choice (ECC) Model is a simulation model that allows the user to study various alternative capital and recurrent costs scenarios created on the basis of a curriculum program. It is set up on Lotus 1-2-3 for the IBM PC compatible microcomputer as well as Excel for the Macintosh. It was developed as an illustrative tool to create a new attitude toward curriculum choices among decision makers in developing countries.

Currently this is a controversial issue. Developing countries, understandably, are defensive when it comes to choosing what it is they want their children to learn, and they are rightly suspicious of efforts by development agencies urging them to economize. External efforts in this regard are often interpreted as ethnocentric, or perpetuating inferior education. The purpose of this model is to enable officials from developing countries to visualize the sacrifices being made within their own

education system as a result of curriculum breadth. The model was designed not as an analytical tool for curricular options but rather as a tool to illustrate **why** curricular cost options are important to consider. The model visually portrays the cost implications of adding a new subject or teaching a subject through the intensive use of laboratories and trade-offs based on such decisions. Through the use of graphics, officials from developing countries will be able to see the order of magnitude of these sacrifices and, for the first time, might be expected to raise the issue of curriculum costs at home.

The ECC Model is designed and available in two forms:

1. A demo-diskette to illustrate the relative cost implications of each subject in a set curriculum. The four demonstration samples available are:

Malaysia - National Secondary School
Jordan - Comprehensive Secondary School
China - Lower Middle School
Barbados - Diversified Secondary School

A demonstration manual accompanies the demo-diskette (Nazareth, 1986). *No data input is required*; all data have already been entered.

2. A blank simulation template that requires the user to provide specific data on a curriculum of his or her choice. A user manual accompanies the template diskette.

Uses of the ECC Model

The model enables the user to study cost implications of alternative scenarios created on the basis of a curriculum program. It provides a means to visualize and analyze piece-by-piece the curriculum's cost—the annual per student cost for each unit period of a subject; the excess or cost wastage due to employing specialized teachers as opposed to teacher equivalents; and, for the more ambitious, the marginal costs of increasing the number of periods offered per week, for each subject.

The key concept employed in this model is "relative cost." Actual data are difficult to obtain and if not treated with caution, can be misleading. Data are difficult to obtain because of the "traditions" of structuring educational programs by levels of education and by size of student cohorts rather than by subject matter. Since subjects are not traditionally considered substitutable, subject costs are rarely identifiable. The data, used in the four demo-diskettes for illustrative purposes, had to be located by subject specialists from long and undifferentiated lists of equipment. It is hoped that the concept of relative cost will give the planner better leverage for making comparisons among different categories of subjects, e.g., academic non-science, science, vocational, and extracurricular subjects.

Relative cost data obtained in this manner could be used to evaluate a program and justify expenditures. However, such information must be coupled with program objectives and program outputs. Other factors that have to be considered are whether these objectives are attained and whether they correspond to student and human resources needs.

Possible Users

The ECC Model can be used as a tool for teaching educational planning

students and Ministry of Education officials the trade-offs in curricular choices and the cost implications of policy options and decision making in this field.

National curriculum planners. Imagine that a policy is suggested to "diversify" the curriculum for, among other reasons, meeting the need for graduates with certain skills. The model can help planners examine various subject combinations and see the overall implications for capital and recurrent costs on the national education budget.

Questions which one can ask include:

(a) What if we increase the number of science or technical workshop subjects?
(b) What if we reduce the proportion of laboratory sessions within the science subjects?
(c) What if we include some extracurricular activities such as music, art, and physical education?
(d) What if we emphasize language subjects?
(e) What if we include more teaching periods on civics and good citizenship?

School architects. Even if the subject matter in the curriculum is "fixed," the model enables the user to study variations in costs based on different facility utilization options.

Among the questions that can be asked are:

(a) How many classrooms, labs, special rooms, etc., are needed for the optimum operation of the program?
(b) How many more class periods can be conducted in each facility to increase its use factor and minimize "downtime"?
(c) How would per subject costs vary if some facilities were shared among subjects?
(d) What is the optimum school population needed to justify the set curriculum?

Teacher trainers. In the section of the model entitled "Teachers," the teacher equivalents[2] needed to conduct each subject is calculated based on the weekly teaching load. If the curriculum selected is a national curriculum for, say, secondary comprehensive schools, then graduates of teacher training colleges could be trained to teach optimum combinations of subjects instead of specializing in only one. This could obviously reduce recurrent costs and could potentially alleviate the specialized subject teacher shortage common in developing countries.

School administrators. Based on the cost information derived from the model, administrators would be able to differentiate more clearly school budgets, including salary and non-salary expenses. For example, what would be the economies to

(a) employ teachers who can teach subject combinations instead of subject specialists?
(b) reduce the use of consumable materials?
(c) delay the replacement of deteriorated furniture and equipment?

Development agencies staff. At the appraisal stage of an education sector project, project officers can use the model to run alternative scenarios for studying costs related to school size (enrollments); facilities required; construction,

furniture and equipment for each facility; teacher salaries; and non-teacher recurrent costs. The number of schools that can be built with a fixed budget can be calculated, or the total cost of building can be computed (if the number of schools desired is pre-determined) by using these figures.

Description of the Model

The model consists of a computer printout with seven distinct sections. Each of these will be described briefly.

Summary information. This section contains basic data that are specific to *one* typical school offering the curriculum under study. Most of these data are used throughout the model. For example, "Weekly School Periods" is used to calculate the use factor of facilities and "Total Enrollment" is used to calculate capital and recurrent costs "per student."

Curriculum. The user of the model template enters the required information in the headings section of the model to show the grade, mode/stream (e.g., science, arts, commerce) and number of classes in each grade in the school. The remainder of the curriculum section appears as a school timetable showing the number of periods per week taken by each stream of students. The last column sums the "Weekly Class Periods" for each subject.

Facilities. Seventeen columns are reserved for the different types of special facilities or teaching spaces required for the curriculum. Teachers' rooms, cafeterias, dormitories, offices, etc., are not included. The "Weekly Class Periods" summed from the CURRICULUM section are distributed among the facilities. Formulae in this section calculate the number of each type of facility needed for the curriculum. The "use factor" for each facility is calculated as a percentage as follows:

$$\text{Use Factor (\%)} = \frac{\text{(Total Class Periods in that Facility)} \times 100}{\text{(No. of Units of that facility)} \times \text{(Total Weekly School Periods)}}$$

Subtracting this percentage from full capacity gives the downtime or the degree of underutilization of that facility.

Capital costs. The four demo-diskettes contain capital cost data for facilities specific to the country represented. The model template which can be used for any curriculum of the user's choice has pre-set capital cost data that can be changed if actual data are available. They are pre-set because such data in most countries are difficult to obtain or are not available. For this reason the user should keep in mind that the model is illustrative and provides *relative* costs per subject. The simplified average cost per year for the whole curriculum is calculated by dividing the total cost by the useful life of construction, furniture, and equipment. Dividing these average costs by the total number of students in the school system gives "Average Capital Cost/Student/Year."

Teachers. Information on teachers is found in two forms; teacher equivalents and specialized teachers needed to conduct each subject in the

curriculum. Teacher equivalents are calculated by dividing the total weekly class periods per subject by the teaching load per week.

The "minimum teachers" situation arises when it is possible for all teachers to teach a combination of subjects and the "maximum teachers" situation arises when specialized teachers are recruited to teach only one subject each. In real life, the actual number of teachers fall between these two extremes.

Maximum recurrent costs (Cost/Student/Subject/Year). In this section comparisons are made between capital and recurrent costs incurred for each subject. The recurrent costs are split among those which are teacher-related (specialized, full-time teachers) and others (including consumable materials, textbooks, etc., but not including administrative costs). Above the label in each column is a formula showing how each set of values is calculated. This section is split into two distinct parts. The first part presents costs for each subject and incorporates the number of periods offered in that subject per week. The second part, labeled "/PERIOD (US$)", indicates all costs incurred for *one* period of each subject—academic non-science, science, vocational/technical, and extracurricular activities.

Minimum recurrent costs (Cost/Student/Subject/Year). This section differs from the previous one in one respect. Here teacher-related costs are calculated based on teacher equivalents (hence, minimum costs) rather than teachers rounded up to whole numbers as in the previous section. All other columns follow the same method of calculations as described in the previous section.

The graphs. There are six graphs based on data from various columns in the seven sections of the model. Five of them are stacked bar graphs of (a) capital, (b) teacher recurrent, and (c) other recurrent costs for each subject as well as for each period (unit of 45 or 50 minutes) of a subject. One graph shows the "use factor" as a percentage of all the special facilities needed to conduct the curriculum.

Conclusion

The ECC Model was developed under the auspices of the Economic Development Institute of the World Bank.[3] Earlier versions of the model have been tested and demonstrated in-house to educators and economists whose helpful suggestions have improved the final product.

The model was demonstrated at a Symposium on "Microcomputer Applications for Education and Training in Developing Countries," sponsored by the National Research Council and held in Cuernavaca, Mexico in November, 1985 for senior officials from the Ministries of Education and Universities throughout North and South America and the Carribean. It was also shown at the Center for International Education at the University of Massachusetts and at the Graduate School of Education at Harvard University.

As part of a continuing dissemination strategy it will be used, in June, 1986, as an illustrative tool during a workshop for "Cost-Effective Teaching of Practical Subjects at Secondary Level" held in Trinidad for participants from Commonwealth countries, and in Lisbon at a seminar entitled "Planning and Mobilization of Financial Resources for Education" designed for senior offficials in Ministries of Education, Planning, and Finance from the Middle East and North Africa.

ENDNOTES

[1]Japan is a principal exception: it is in the midst of a reform to broaden its curriculum choices. The Japanese curriculum, until recently, has been narrow, in the extreme, for a country with such financial resources.

[2]Teacher "equivalent" refers to the amount of time expressed in fractions, e.g., 1/3, 1/2, or 1/4, etc., that is required for the teaching of a particular subject.

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Alwin V. Miller

PLANNING FOR MANPOWER DEVELOPMENT, MINISTRY OF EDUCATION, SULTANATE OF OMAN[1]

Oman, a relatively small country with a population of approximately one million persons, is located on the Persian Gulf across the Straits of Hormuz just 18 miles from Iran. In 1970, when the present Sultan came to power, the total educational system for the country consisted of three elementary schools with an enrollment of slightly over 900 boys.

The country has done a tremendous job of enlarging its educational system during the past 15 years. The enrollment in the elementary schools represented about 75 percent of the 6-year-olds in Oman in 1984. An unpublished school mapping study estimated that about 60 percent of all Omani children in the six-year-old to eleven-year-old age group were in school. As for the efficiency of the elementary schools, it was estimated that 80 percent of the first grade enrollment in 1984 would complete the sixth grade.

Sultanate of Oman
Public School Enrollments
1984/85 School Year[a]

	Number of Students		Total	Number of
	Boys	Girls	Students	Schools
Elementary	89,492	65,897	155,389	308
Junior High				
General	19,190	9,124	28,314	195
Other	142	299	441	2
Senior High				
General	6,208	2,943	9,151	38
Other	1,584	402	1,986	16
TOTAL	116,616	78,665	195,281	559

[a]"Booklet on Educational Statistics for the Academic Year 1984/85" published by the Educational Planning Department of the Directorate of Educational Development, Ministry of Education and Youth Affairs, Sultanate of Oman.

Alwin V. Miller served as an education advisor for the Agency for International Development until his retirement. Currently, he is an educational planning and human resources development consultant.

In May, 1985 there were more than 2,300 Omanis enrolled with government scholarships in post-secondary studies outside the country. In September, 1986, Sultan Qaboos University will open for its first year with students in the following fields of study: Agriculture, Education and Islamic Sciences, Engineering, Medicine, and Science.

The personnel required for the tremendous expansion of public education were provided largely by contract personnel from other countries. The following table shows the figures on the public school teaching staff by Omani and non-Omani early in the 1984/85 school year.

Sultanate of Oman
Public School Teachers
By Nationality and Level of School
1984/85 School Year[a]

Level of Education	Omanis			Non-Omanis			Grand Total
	Male	Female	Total	Male	Female	Total	
Elementary	677	500	1,177	2,559	1,633	4,192	5,369
Junior High							
General	23	26	49	1,387	618	2,005	2,054
Other	---	3	3	16	21	37	40
Senior High							
General	9	11	20	393	228	621	641
Other	26	9	35	169	48	217	252
TOTAL	735	549	1,284	4,524	2,548	7,072	8,356

[a]"Booklet on Educational Statistics for the Academic Year 1984/85" published by the Educational Planning Department of the Directorate of Educational Development, Ministry of Education and Youth Affairs, Sultanate of Oman.

In addition, of the 862 administrative staff reported in the schools that year, 390 were Omani and 472 non-Omani. The Ministry of Education is interested in filling government posts as rapidly as possible with Omani citizens. As an early step in Omanization, the Omani American Joint Commission requested U.S. assistance in developing a plan for training Omanis to perform satisfactorily the duties required of government employees.

Organization of Education and Training in Oman

The policy-making body for the Education and Training Sector is the Inter-Ministerial Education and Training Council. This Council is chaired by the Sultan and is composed of the Minister of Education and Youth Affairs, the Minister of Social Affairs and Labour, the Minister of National Heritage and Culture, and the Under Secretary of Finance. The Secretary of the Council is an advisor to the Office of the Under Secretary of Education. Other government officials are invited

to attend meetings of this Council in connection with their other official duties.

Educational Planning in Oman

The Ministry of Education and Youth Affairs has two Under Secretaries: one for Education and the other for Youth Affairs. The Under Secretary of Education has, under his jurisdiction, five Director Generals: Educational Development, Education, Administration, Finance, Scholarship and Training, and Southern Region.

The Director General of Educational Development has the following Departments under his supervision: Educational Planning, Educational Research, Curriculum Development, English Language Training, and Teacher Training. In addition to the Department of Educational Planning in the Central Ministry, the Southern Region and each of the other eight Provincial organizations have a planning section. The educational planners in the Region and Provinces are considered as members of the Department of Educational Planning for technical direction and for training purposes, although they operate under the supervision of the Regional Director General or Provincial Director. There were 19 professional staff members in the Department of Educational Planning in 1984. Of these members, 5 were Omanis and 14 were non-Omanis.

The author was asked to conduct a training needs assessment of the Education and Training Sector (The Ministry of Education and Youth Affairs, the Vocational Training Department of the Ministry of Social Affairs and Labour, and the Institute of Public Administration of the Ministry of Royal Diwan Affairs). As the first step in this assessment, a Manpower Assessment Form was designed and distributed. This form requested information about present staff by job title and minimum Civil Service grade, how many incumbents were Omani and non-Omani, the level of education of each incumbent, as well as the number of employees expected in 1990. As a crosscheck to the information received through the Manpower Assessment Form, personnel information which was available from the Planning Department of the Ministry of Education was analyzed. Furthermore, discussions were held with officials in selected units to determine more accurately the training needs which had been indicated in the assessment.

With the personnel information described above, several tables were constructed. The first table was developed to show the number of persons listed under each position, how many were Omanis and how many non-Omanis, the estimated employment level in 1990, and the highest degree earned by incumbents of each position.

The next step was to review the positions to determine the minimum level of education which should be considered for each position. Among the factors which were taken into consideration included:

1. The educational level of non-Omani incumbents of a position. If a non-Omani who was employed under contract to perform the duties of a position had a Master's degree, this was considered as evidence that an Omani should also hold a Master's degree in the field to be fully qualified to hold the same position.

2. The position in the educational hierarchy. The level at which university training is ordinarily given in a subject is another indication of the educational level of a position. For example, since most training for professional positions in

educational research are given at the post-graduate level, it would be reasonable to require at least a Master's degree in educational research for a fully qualified specialist in educational research.

3. The level of training of positions supervised by the incumbent of a position. Most qualified teachers would have a Bachelor's degree in Education. It was therefore assumed that one who supervised, advised, or inspected teachers and schools, would hold a Master's degree in Education or its equivalent. For example, school principals and school inspectors should have the Master's degree.

The results of this review were shown in a table with the following information: job title, number of employees, number of Omanis in the position who held the minimum level of education, and the number of Omanis in the position who need training to reach the minimum level of education. The educational level recommended for each position was at the minimum level.

With the information which was provided by this study, a long-range training plan was developed for the Ministry of Education to provide for the greatest possible development for its Omani staff. There were 118 positions which were identified as needing education at the Master's degree level. Of these 118 positions, only 25 were occupied by Omanis and only seven of the Omanis had achieved the Master's degree at that time. Of the other Omanis holding these positions, five held the Bachelor's degree and five more had post graduate diplomas. These 10 Omanis seemed to be the most logical candidates for Master's degree training. In addition, there will be new university graduates joining the Ministry of Education in each of the succeeding years. After they have obtained the requisite experience, some of these new employees should be sent abroad for additional degree training for the benefit of the educational system.

At the Bachelor's degree level, there were 258 positions which were identified as needing training at that level. Of these 258 positions, 132 were occupied by Omanis. There were 47 Omanis in the Bachelor's degree level positions who had achieved that degree or higher. There were 15 Omanis in these positions who had the post secondary diploma and an additional 40 who had completed secondary education. These employees were recommended for consideration for additional degree-level study abroad.

Some officials of the Ministry need specially designed courses which could be taught in Oman. Although in many cases the expertise needed for instruction is available in the Ministry of Education or in other government units, the potential trainers often cannot be released from their jobs for the 8- to 12-week periods that would be necessary to develop and present a program of instruction. A careful search should be made for potential trainers in such institutions as the Teacher Training Institute, Sultan Qaboos University, The Oman Technical Institute College, and the Institute of Public Administration. In some cases, it may be necessary to locate trainers from the United States and/or other countries.

Consideration was given to each subject where enough trainees could be found to justify organizing a special course. The topics considered included: sources of trainees, subject matter of the course, length of course, and proposed budget.

The courses considered included: educational administration, vocational

guidance, educational planning, educational research, teacher training, examinations, and section heads (including personnel, finance, and others).

Since it was unlikely that sufficient funds would be made available to provide for all the training needed, an effort was made to place the training needs in a priority order:

The first priority was given to the in-country courses using instructors from the United States. The primary reason for this suggestion was that the staff of the Ministry scheduled to attend these courses were in key positions in the Ministry. Another reason was that the request for this training included the provision of a Specialist in the field of training who would work with the staff of the affected Department or Departments over a period of time to provide on-the-job training as well as course instruction.

The second priority would be the other in-country courses, all of which would be scheduled for 1986.

The third priority would be those Master's Degree programs (and the one Doctor's Degree program) for which candidates were already in place. It was believed that these Omanis had the necessary education and experience to qualify for additonal education, and the experience in the Ministry of Education to justify an expectation that they would return to the Ministry of Education after training.

The fourth priority would be Bachelor's Degree programs. Those staff members, particularly in the offices of the Directorate Generals of Education and Educational Development, who do not yet have Bachelor's degrees need that level of training to provide more effective leadership.

The fifth priority was given to short-term training. These programs could be sharply focused to improve the ability of current job holders to execute their functions more effectively.

The sixth priority was given to long-term, non-degree training. This type of training can be valuable, though it is likely that, in many cases, one or more properly designed short-term programs can achieve the same results at less cost in time and money. It was, therefore, recommended that funding for this training be postponed for later consideration, when additional funding may become available.

With the information provided by the manpower assessment and the additional information gained from the Departments, recommendations were made for a training plan for the Ministry of Education. For individual training programs, tables were developed showing, for each person proposed for training, the name of the individual, the recommended departure date, location of training, field of training, length of training, and an estimated training cost. For in-country training programs, the report included the name of recommended courses, the number of trainees expected to be available for the course, the proposed date, proposed course length, source of instructor (whether from Omani institutions or from the United States), and estimated costs.

Organization for Education and Training

The Higher Education and Training Department of the Directorate General of Scholarships and Foreign Relations plays an important role in providing scholarships for staff members of the Ministry who will receive training outside

Oman. The Training Officer, in the Directorate General of Administrative Affairs, collects information on training needs in the Ministry, but has limited resources with which to provide the training.

Summary and Recommendations

The Sultanate of Oman has done a tremendous job in developing an education system from three elementary schools in 1970 to more than 500 institutions in 1984/85. The present system provides education within the country from the first through the twelfth grades. In September, 1986 when Sultan Qaboos University opens its doors, the system will provide education through the Bachelor's degree level.

Because of the need to expand its educational system more rapidly than trained Omanis became available to staff the schools and Ministry, the Sultanate was forced to use contract personnel from other countries for the most part.

With a fairly complete educational system in place that graduates trained Omanis and the large number of Omanis returning from training abroad, the Sultanate is now trying to replace non-Omani staff with Omanis as rapidly as possible. The workforce assessment was an early step in that Omanization process.

The training plan recommended provided a framework for the Ministry of Education to estimate resource needs for preparing Omanis to assume higher level positions in the Ministry of Education and its related activities. From this information, additional funds can be requested from other friendly governments (such as the United States Agency for International Development) and international organizations, such as the International Bank for Reconstruction and Development (The World Bank) and various United Nations agencies.

If the Ministry is to operate its training programs in the most effective manner, then it is recommended that a central agency be developed within the Ministry that would be responsible for the coordination and implementation of in-service training for Minstry employees. It was further recommended that a senior staff member be recruited (or assigned from existing staff) and given the responsibility for all in-service training and education for employees of the Ministry of Education (Training Officer). To provide guidance, there would also be a Training Policy Committee composed of Director Generals and chaired by the Under Secretary of Education. The Training Officer would serve as the Secretary of this Committee and have the responsibility of preparing information on such topics as areas of training needed, personnel available for training, scheduling, resources available for training, and additional resources required to conduct such training as is approved by the Training Policy Committee.

ENDNOTE

1This article has been adapted from two unpublished reports written by the author for Checchi and Company, Contract No. AID NEB-0101-C-00-4077-00: *Manpower development study and training needs assessment for the Education and Training Sector, Sultanate of Oman* (May, 1985) and *Recommended training plan, education element of the Education and Training Sector, Sultanate of Oman* (October, 1985).

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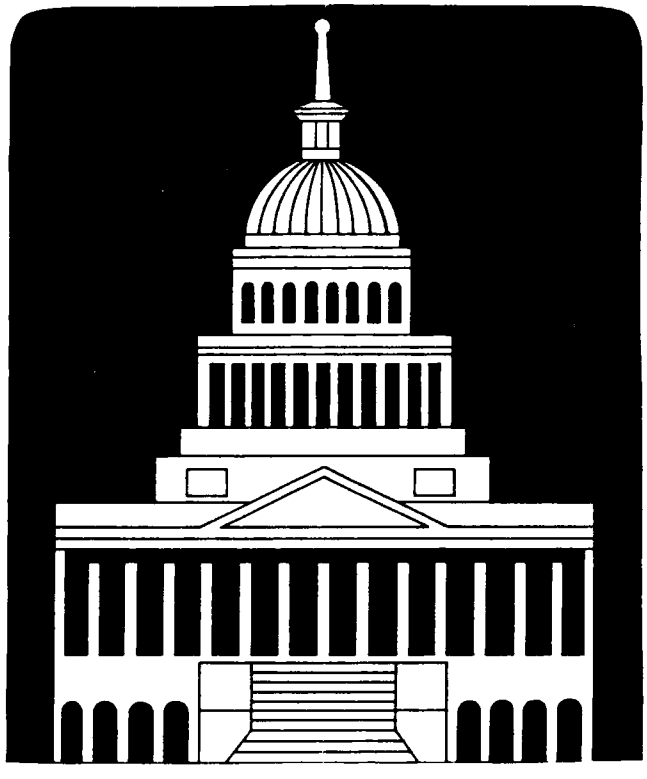

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"Educational Planning: Theory and Practice"

October 26-29, 1986
Washington , D. C.

International Society For Educational Planning
1986 Annual Conference

Washington, D.C.
October 26-29, 1986

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Telephone number
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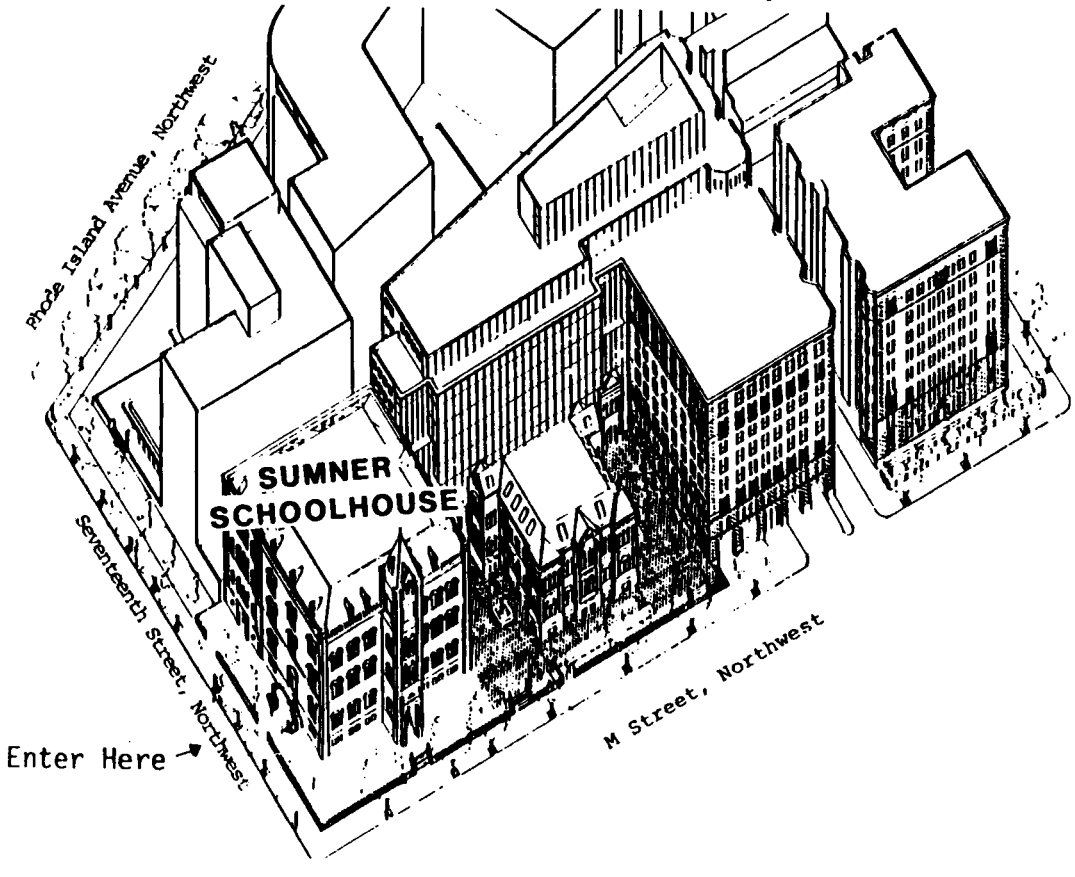

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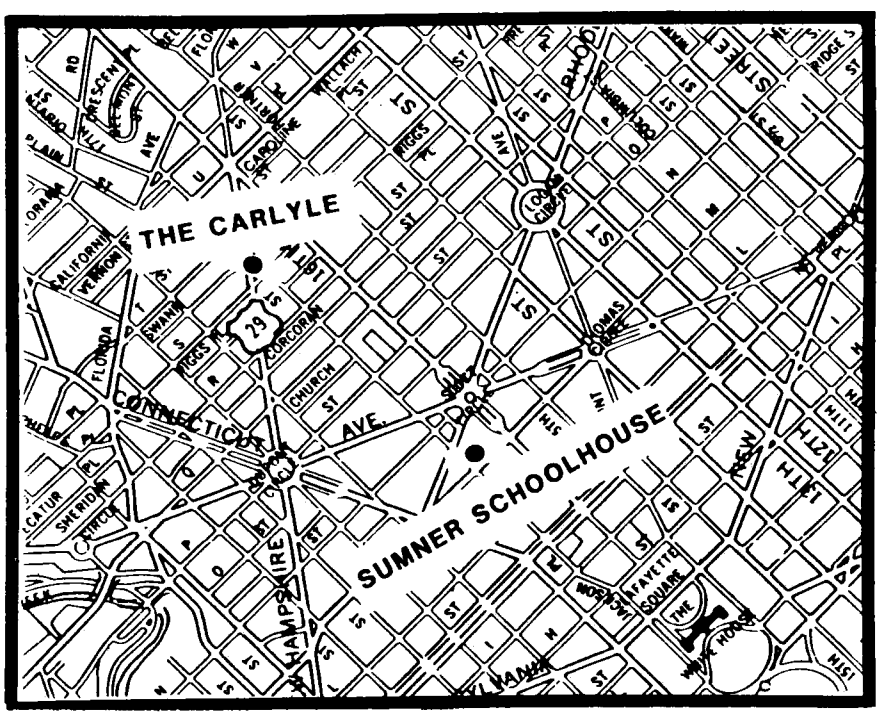

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