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ABSTRACT

The existing crises in the schools show a need for some systematic method of planning that leaves little to chance or opinion and which rests more on the scientific techniques of problem solving. Although the use of a systems approach in public programs is just beginning, it seems to hold considerable promise for education. Hence, the Nevada State Department of Education has designed a model for systematic, comprehensive educational program planning and evaluation which should be applicable to educational problems at any level of operation or complexity. The model provides seven basic steps for a systematic approach to problem solving: needs assessment, problem definition, program development, program operation and evaluation, final analysis of evaluative data, dissemination, and recycle. The approach is predicated on the existence of a workable relationship between goals and objectives. (Author/WM)

NEVADA

COMPREHENSIVE PLANNING MODEL FOR EDUCATIONAL PROGRAMS

August, 1973

KENNETH H. HANSEN
Superintendent of Public Instruction

State Board of Education

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Acknowledgment is given to the entire Department of Education staff for their patience and wholehearted support, not only in advising and assisting in the development of the system, but in applying the concepts to their daily operations.

If support for the implementation of the concepts embodied within this model continues, we may expect a significant breakthrough in educational planning and accountability.

KENNETH H. HANSEN
Superintendent of
Public Instruction

PREFACE

The purpose of this document is to provide information about planning and evaluation within the Nevada Department of Education and to present a comprehensive planning model which may be applied at any level of operation in any enterprise.

It often takes twice as long to plan a project, for example, San Francisco's "Golden Gate," as it takes to construct it. Few would suggest that the operation of our social institutions is less complex than building a bridge, yet we operate for years on plans which are sometimes made overnight, or on old plans that have never been evaluated.

Educational theorists have paid only passing attention to the problem of translating their findings to the classroom situation. Methodologists usually focus on the "how to" aspects of operation. The Division of Planning and Evaluation was created by the Nevada Department of Education to help bridge the gap between theory and operation, to facilitate planning and to provide the means by which the adequacy of planning *and* operation can be evaluated.

The existing crises in the schools show that some systematic method of planning is needed which leaves little to chance or opinion and rests more upon the scientific techniques of problem solving. In the midst of every endeavor is the task of making theory and practice mutually consistent. Education is no exception, and, as in any other long-established institution, there is the ever present danger of operating by theoretical conclusions without submitting them to practical test.

Much of teaching and education is a creative process, but in the rush of day-to-day activities we may forget the importance of refining our thoughts so they become relevant to the real world. We need a system which is compatible in theory and in operation and which has the inherent flexibility for general and specific application.

FOREWORD

Increased federal participation in state and local educational programs, accelerated by Public Law 89-10 in 1965, brought heightened awareness of the need for definitive planning and evaluation. In 1968, the Nevada Governor's State Council on Vocational-Technical Education and Community Colleges charged the State Department of Education ". . . with the responsibility of developing a master plan for education in the State of Nevada. . . ." In addition, the 1968 Special Session of the Nevada Legislature charged the State Department of Education as follows: "The State Department of Education shall study and recommend to the 55th Session of the Nevada Legislature a master plan for education. . . ." The master plan was completed and published in 1969.[1]

In March 1969, the Department negotiated a contract with the Research and Educational Planning Center of the University of Nevada at Reno for a statewide assessment of education. The first phase (statistical information) was completed and published May 1, 1969. In 1969-70 the second phase (a statewide educational assessment) was completed and published.[2]

On June 5, 1970, the U.S. Office of Education granted funds for the establishment of a planning and evaluation division within the Nevada State Department of Education. On November 2, 1970, the division was activated with the following goal: "To design, develop and implement a planning and evaluation unit in a manner that will provide continuous maximum service to the SEA and to the LEA's and will result in the improvement of public education throughout the State."

Although program planning has always been a function of the Nevada State Department of Education, it has never been conducted on a systematic and comprehensive basis. Further, program evaluation has not been coordinated and program information has been gathered on a piecemeal basis. A further complication has been the fact that information has not always been retrievable in a form that could serve the needs of program planners and managers.

Although evaluation occurs at the level of program management, the degree of formality and the form varies considerably among programs. One consequence is that the interfacing of information from several sources has been the result of a great deal of ad hoc effort rather than a systematic organizational function.

On January 4, 1971, the Department of Education Cabinet adopted ten "Common Goals of Nevada Education" and instructed the Division of Planning and Evaluation to expedite a procedure for development of *process* and *performance* objectives which would set in motion some systematic progress toward the goals. The goals are: (1) fostering creativity, (2) vocational productivity, (3) continuing education, (4) intergroup acceptance, (5) motivation to learn, (6) citizenship and social acceptance, (7) self-understanding and acceptance, (8) mastery of basic skills, (9) physical and emotional health and (10) intellectual development.[3]

Nevada's common goals are arranged in a hierarchy in three areas of basic human needs: physiological and safety; affiliation and esteem; and self-actualization, cognitive and aesthetic. These goals also presuppose that the overriding purpose of education is to increase the functional and self-actualizing abilities of people.

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[1]State Department of Education. Planning Education for Nevada's Growth. Carson City: The Department, 1969. Two volumes.)

[2]State Department of Education. Education in Nevada, An Assessment for 1970. Carson City: The Department, 1970.

[3]*Common Goals of Nevada Education.* Carson City: State Department of Education, 1961. 16 pages.

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RATIONALE

Faced with complex and often conflicting demands, plus a scarcity of resources to meet all the urgent needs, the Nevada State Department of Education concluded that some method should be designed which would provide a systematic procedure for establishing priorities, attacking problems and evaluating outcomes. Originally developed in the national defense and space efforts, the systems approach has spread through private and governmental agencies. Although the use of systems problem solving in public programs is just beginning, it seems to hold considerable promise for education; hence, the Department's Division of Planning and Evaluation has designed a model for *systematic, comprehensive educational program planning and evaluation.*

WHAT IS THE SYSTEMS APPROACH?

The systems approach is the scientific method applied to the solution of problems. It places emphasis on identifying, defining, analyzing, synthesizing, hypothesizing, programing, monitoring, and evaluating. This approach seeks the best alternative for achieving specified objectives. While this approach is only one part of policy decision-making, it provides a new capability in what is often a crucial area of decision. The traditional, scientific approach, from which the systems approach derives, included the general steps of (1) identifying the problem, (2) establishing an hypothesis, (3) testing and retesting, (4) evaluating, and (5) establishing a working conclusion to be retested and refined. Present day models for problem solving vary in their degree of emphasis and refinement of the various steps in the scientific method, but they all rely upon some systematic approach to identification of needs, problem definition, solution strategy, operation, and evaluation.

A MODEL FOR PLANNING

The Nevada Department of Education has prepared a general model, which should be applicable to educational problems at any level of operation or complexity. The model (see Figure 1) provides seven basic steps for a systematic approach to problem solving.

Each of these steps may be broken into several

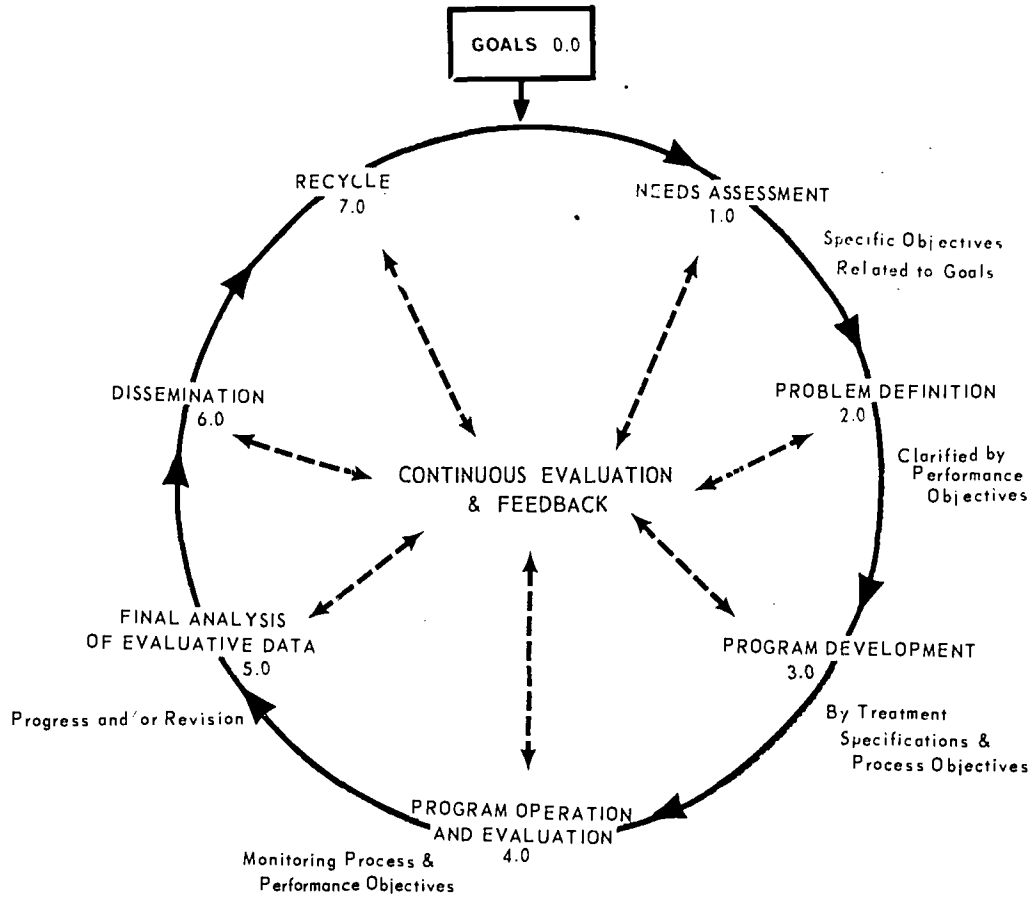


FIGURE 1: Relationship of Major Components in Program Planning, Operation and Evaluation

substeps as shown in subsequent sections of this document. Key factors to keep in mind when using the model include the degree to which the situation to be changed is under the control of the agency. It is also important to keep in mind that the determination of *which* problem or problems will receive priority should be made by appropriate policy makers. *Evaluation* is a continuous element.

A systematic, controllable approach to planning and evaluation is predicated upon a workable relationship between goals and objectives. Planning, operation, evaluation, and accountability presume goals and objectives. The more clearly goals and objectives are stated and related, the more effective the total operation will be. They should be the major basis of assessment, planning, operation, and evaluation (see Appendix B).

Goals are defined as ends *toward* which an agency or person performs work or renders services. Objectives are the *intermediate* ends for which work is performed or services rendered; the desired product of an activity representing progress toward goals.

The Policy Manual of the Nevada State Board of Education includes the following statements:

> It is the responsibility of the State Board of Education to help promote a system of education that will fit the needs of a highly diversified citizenship at the most economical rate of expenditure. It is the responsibility of this Board to interpret to the best of its ability to the Legislature, the educational needs of the State and to make its interpretations known to the public. In this responsibility, it shall need always the counsel of local school boards and citizens interested in educational welfare.[1]

NEEDS ASSESSMENT
(Step 1.0)

Perhaps the most tedious and challenging step in needs assessment is delimiting the priority need. There is a strong tendency for policy makers to start with a need which is too broad and general, such as to increase the rate of growth in reading achievement for *all* pupils K–12. While such an effort is commendable, it is difficult and expensive to monitor and control in explicit fashion. If such broad need can be approached by an in-depth analysis of needs in reading for 9-year-old children however, then it becomes more feasible. Many of the findings can be related to continuing assessment and problem solving at other age levels.

Delineate the need in detail before applying broad solution strategies. The overall concept of needs assessment advocates a routine, formalized, and on-going process to determine whether or not there are discrepancies between what the policy makers believe ought to be and what is. It helps effect communications in planning and programming to establish a list of priority needs in terms of their criticality, frequency, and their probable short-range and long-range consequences. It is also important to consider time, resources, and political realities relating to priority needs.

Determination of the need(s) to receive high priority is a responsibility of management. In making this determination, a conceptualization of values and objectives in the area(s) under study is pertinent. A skeletal outline of such a conceptual relationship is presented in Figure 2.

A hierarchy is involved in the sense that societal values strongly influence decisions made at the institutional and instructional levels.

It is a reasonable assumption that any human endeavor is guided by more or less well-defined goals, and objectives. The degree to which we perceive the hierarchical order determines, to a great extent, the practicality with which we prioritize our needs.

In the daily operation of the educational institutions, the interested parties, e.g. society, institutions, and teachers, have goals and some more or less well-conceived objectives leading toward the goals. An important part of a needs assessment is, therefore, a recognition of the hierarchy of goals and objectives as it relates to societal expectations, to institutional goals and to instructional objectives. *The difference between status (what is) and the objective (what should be) is the need.*

In the needs assessment step of program planning, we must establish learner performance objectives before we can analyze the need (difference between what is and what should be) and establish some estimate of the severity of need. Needs assessment, step one in the model for comprehensive educational program planning, is depicted by Figure 3.

Societal expectations, albeit very important, are often somewhat vague and elusive. Periodically, educational institutions should conduct a survey and anlysis of the community expectations to get some "fix" on the way society perceives needs.

Suppose that a perceptual survey indicates that third-year elementary pupils are reading below expectation. Further assume that the level at which they should be reading has been agreed upon. Try then to determine, as accurately as possible, just how much below expectation they are reading (the status of pupil performance). Using all available information, determine *which* children are achieving below expectation and how much (and which are achieving above); what ethnic socio-economic levels, low I.Q., health, attendance, promotions, retentions, grades, handicaps, self-concept, and aspiration factors may be involved; in short, collect as

[1]Policy adopted, State Board of Education, 1964 (see Policy Manual).

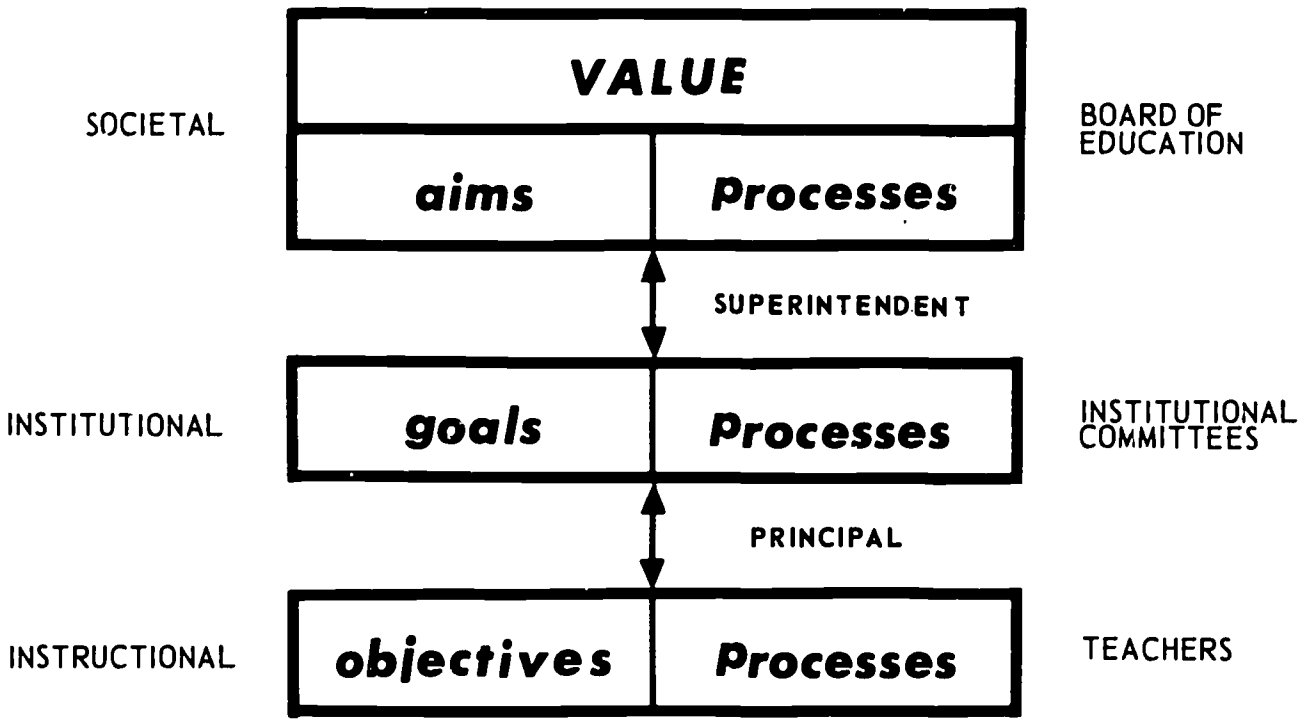


FIGURE 2: Values, Aims, Goals and Objectives, with Societal, Institutional and Instructional Relationships

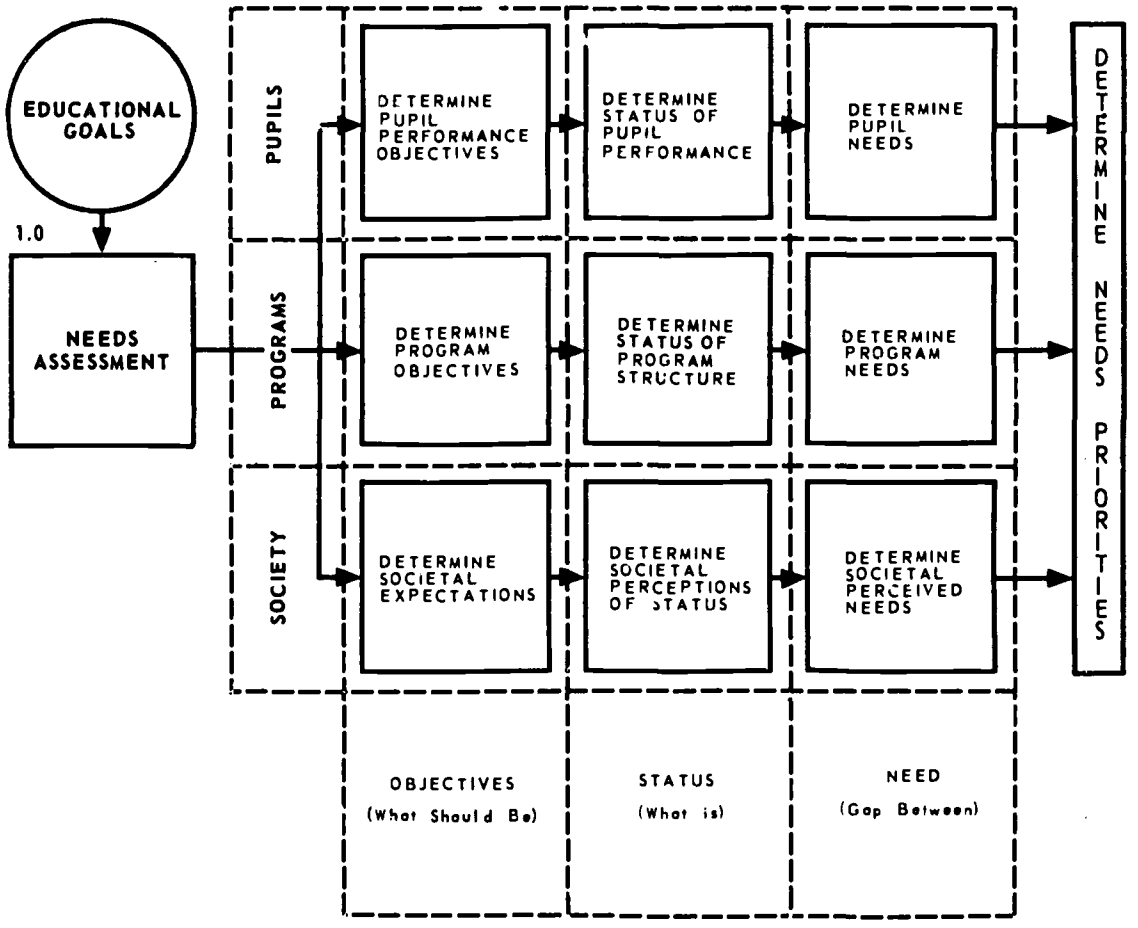


FIGURE 3: Needs Assessment

much specific data as possible. It is important to know the severity of the discrepancy as related to the school and societal experiences students have had.

At this level of needs assessment a great deal of time and effort may be involved in order to establish state and or district objectives and then to determine just where children are in relation to those objectives. When this is done in the designated area, more *specific* pupil *performance objectives* and specific *process objectives* should be written. (See Appendix B for definitions of objectives.) It then becomes possible to prioritize needs, develop specific programs and evaluate results according to a hierarchy of specific goals and objectives. The more accurate the measurement of need, the greater the possibility of good problem definition.

Knowing the gap between what is and what is expected, it is possible to provide evidence which the decision makers can use in arriving at a statement of priorities. Consequently, a specific set of goals and objectives as applied to the specified program need becomes a base referent point. Using this referent point, needs assessment should be continuous.

The high priority need, as defined at this point, highlights the next step—a more analytical definition of the problem, i.e., *why* is there a difference between status and expectation?

PROBLEM DEFINITION
(Step 2.0)

"The formulation of a problem is . . . often [more] essential than its solution, which may be merely a matter of mathematical or experimental skill."—Albert Einstein.

Step two in planning, a vital step in the analysis of need, may be outlined as in Figure 4.

A problem is herein defined as the requirement for a strategy or means to reduce or eliminate a need (the difference between what is and what should be). Problem definition is a delineation of the factors and influences which contribute to the need. This requires careful analysis and a working hypothesis of the various impeding factors revealed in the needs assessment, their degree of influence and tentative theories for reducing them. This analysis may reveal additional factors not previously recognized.

An analysis should be made of the previous processes that were designed to effect the level of behavioral change specified in a performance objective. Monitoring and evaluative data should provide information regarding the extent to which processes were completed

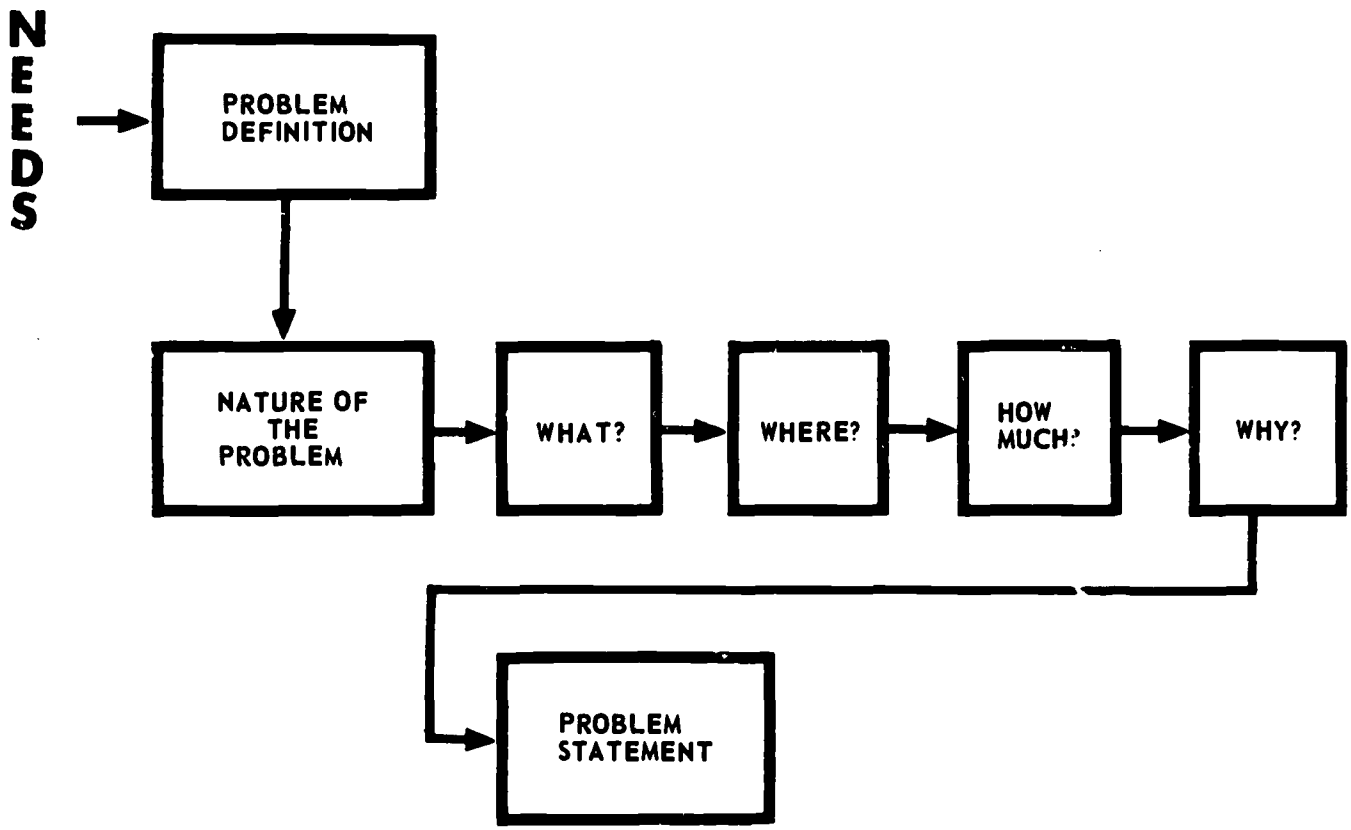


FIGURE 4: Problem Definition

according to specifications and should enable managers to make judgments about their effectiveness.

Four potential alternatives which must be considered as a result of such analysis are:

1. Level of performance satisfactory—reinvest resources in previous processes. (The problem is to maintain the performance level. The need was not as great as first perceived.)
2. Level of performance not attained—processes remain the same (performance expectations too high). Change performance objectives.
3. Level of performance not attained—reinforce management of processes and reinvest resources (same or additional).
4. Level of performance not attained—new processes developed.

Problem definition involves a restatement of the priority need in terms of its related aspects, e.g., reading vocabulary, word attack skills, comprehension, and like factors; break it down by sub-groups, i.e., ethnic groups, age levels, region, or districts; finally, bring all the available information to bear in establishing working conclusions as to the *whys*. In short, a carefully delineated *restatement* (in terms of new information and insights) of the problem is in order. A suggested list of solution processes would be helpful at this point since the consideration for revision of process objectives will be critical in program development.

VARIABLES AFFECTING A PROBLEM

In defining the problem, we define those who are to perform the desired behavior (institutional dimension), *what* behavior is desired (behavioral dimension) and *under what circumstances or conditions* the behavior will be observed (instructional dimension). Since *all* the variables under each of these three dimensions have important relationships to the educational program, we should consider them collectively and separately.

Institutional Variables. When striving to increase gains in reading skills of third-graders the major institutional variable is third-grade students. It is relevant that characteristics of the group be considered, i.e., age, sex, achievement levels, ethnic background, health, self-concept, and attitudes.

Consider other institutional variables such as teachers' experience, training, attitudes, and special abilities as well as the specialists required for unique instructional settings, i.e., remedial teacher, curriculum coordinator, and teacher aides. Family situations, community influence, institutions (religious, political, clubs, etc.), and peer groups are also relative variables.

Behavioral Variables. Though the majority of variables may be in the cognitive domain, do not ignore the relative influence of affective and psychomotor variables. Decide what level of proficiency is desired, in what specified period of time, and decide what measurement instruments will be used. A committee should be appointed to review measurement instruments in terms of their adequacy for the levels of behavior (knowledge, comprehension, application, analysis, synthesis, or evaluation in the cognitive domain, for example), and to select the most appropriate instruments. These evaluation instruments should be chosen on the basis of the performance objectives and as a part of the evaluation design.

Since standardized measurement instruments never measure all the learner skills in a particular subject area, it is imperative that item pools be developed for future program uses. From such pools, criterion-referenced tests may be constructed which will measure learner performance more reliably.

Instructional Variables. Organization, content, method, types of interaction, facilities, and costs should be determined in this area.

PROGRAM DEVELOPMENT
(Step 3.0)

Figure 5 indicates the interrelated substeps in program development.

PERFORMANCE OBJECTIVES

Having analyzed the variables in connection with time and proficiency level, specific performance objectives should now be written. For example: At the completion of *36 weeks* of school (time) *third-grade students* (institutional variable) will show an increase of *9.5 months* (proficiency level) in *reading* (instructional variable content) *comprehension* (behavior variable) as measured by a *standardized achievement* test (measurement). This is a school objective. Classroom performance objectives should also be written, on a more definitive basis, according to the ability level of the group.

The testing committee can now make preliminary plans for selecting measurement instruments. (See Appendix B.)

PROGRAM PLANS AND SPECIFICATIONS

Alternative Solutions. Having developed more specific and comprehensive performance objectives, we must consider alternative solution strategies and possible changes in the variables, including cost. These alternatives should be described in writing for purposes of comparison by the decision makers.

Select Best Solution. Using all the available documentation relating to each possible solution, we should

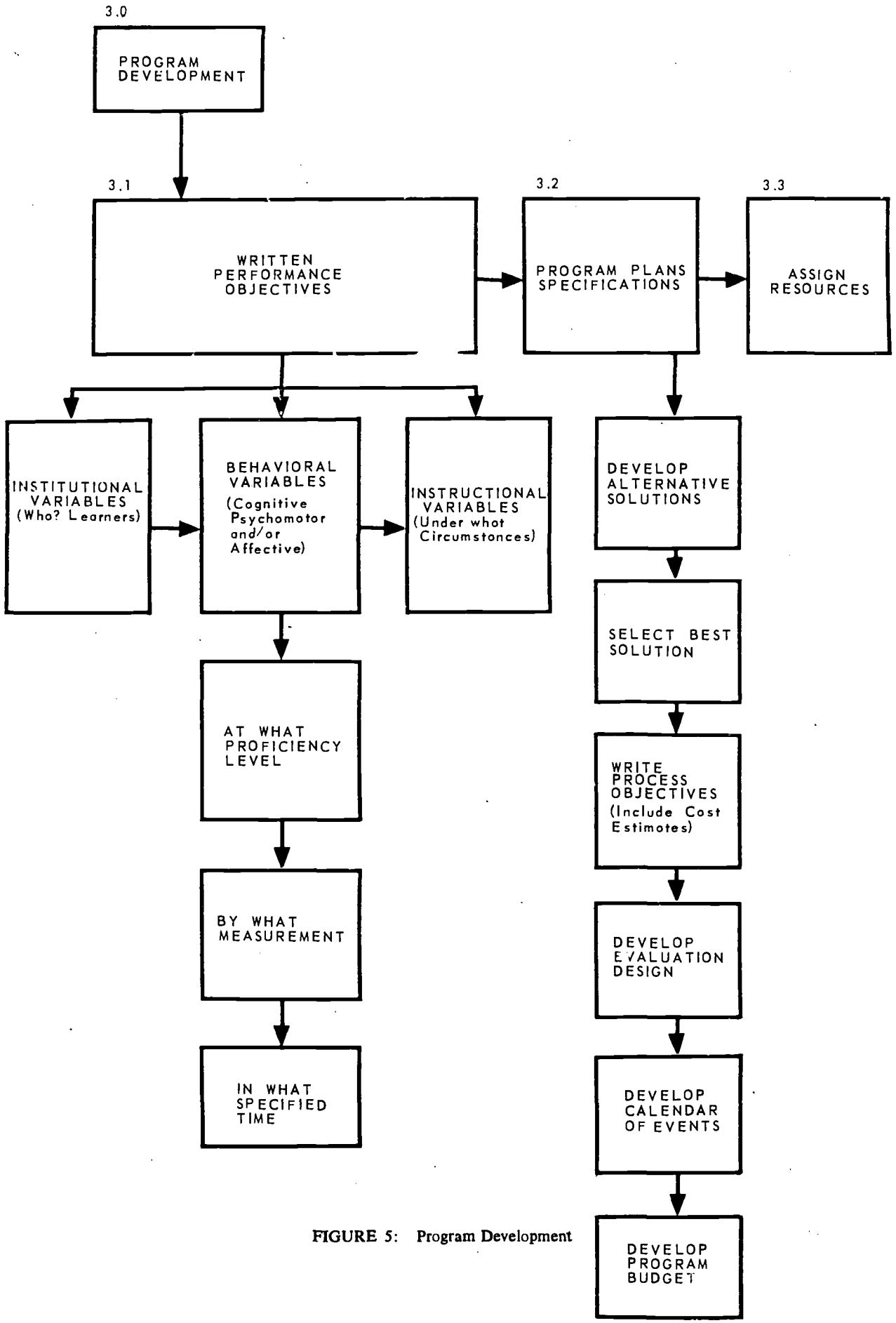


FIGURE 5: Program Development

explore the feasibility and potential of each alternative. The optimum choice should be made in terms of physical and political realities as they relate to school organization, methods, equipment, facilities, time, personnel, cost-effect, and other real-world parameters. Program plans and specifications should be developed and written in detail, considering such items as learner selection and placement, performance objectives, curriculum, instruction, staff role and function, evaluation strategies and design, data collection, reporting formats, calendar of events, and dissemination of information.

Staff role and function specifications include such areas as management, instructional services, audit points, staff training (including writing process objectives), and auxiliary services. These specifications are important to the "best" solution strategy. Written records of these specifications should be maintained.

Process Objectives. (See Appendix B.) A process objective is an activity conducted by a staff member, the completion of which leads toward the accomplishment of a learner performance objective. For example:

> The third-grade teacher (person responsible) will review pupil's readiness (activity) from cumulative records, including diagnostic tests, and assign him to appropriate reading group (tangible outcome) by October 10 (time factor); fifteen minutes per pupil (cost).

The above is a process objective of a third-grade teacher intended to lead to a performance objective such as:

> Third-grade students (institutional variable) will increase their level of comprehension (behavioral variable) in reading (instructional variable) by 10 months (proficiency level) by June 1 (time) as measured by the Comprehensive Test of Basic Skills (method of measurement).

In any instructional program, process objectives should relate to the performance objectives of the instructional program. Process objectives should be written by or for *each professional staff member* for each new or revised program.

Modification of process objectives may be required at any time in the program operation; consideration for revision is critical at the program planning stage. Process objectives should be written as clearly and definitively as possible before a new or revised program is launched, with the performance objectives uppermost in mind.

Evaluation Design. (See Figure 8 for evaluation model.) Evaluation is a continuous process which starts with needs assessment, proceeds through program development and operation, through the measurement of objective attainment, and returns again, in the recycling process, to subsequent needs assessments. Evaluation must have performance objectives as its base, otherwise there is nothing to evaluate. No educational program can be evaluated unless the performance objectives of that program are specifically stated (see performance objectives, Appendix B). Only in this way can any logical measurement design be developed; only in this way can the instructional components of the program be rationally monitored; and only in this way can recommendations for program change and hence learner change be determined.

Calendar of Events. A written calendar of events has value for communications, work flow, monitoring and evaluation. It may be in tabular form or a work-flow chart which may be wall-mounted for easy reference.

While important dates are noted throughout the program development step, it is not until they are placed in some chronological order that potential conflicts can be resolved. Among others, completion dates for learner selection, staff training, test selection, guidelines and specifications for instruction, testing dates, statistical processing, final reports and dissemination dates should be calendared. Completion dates for *process objectives* should be listed sequentially.

Program Budget. At this point, prepare an allocation of resources (people, time, money, facilities and equipment) and an estimated budget (use process objectives to derive cost estimates related to performance objectives); submit the total package to authorities for approval.

ASSIGNMENT OF RESOURCES

Having gained final approval (with any modifications), the final step, before commencing operations, is a studied assignment of resources with whatever staff and/or committee meetings seem appropriate to secure maximum understanding and commitment to the program.

PROGRAM OPERATION AND EVALUATION (Step 4.0)

Frequently this step would involve a pilot or field trial of the plan. If plans have been made in sufficient detail, and personnel and other resources allocated wisely, the program is ready for implementation.

It is vital to the success of the program to develop a monitoring system for both process and performance objectives to assure that all phases of the operation are on target and to process any necessary modifications. A system for monitoring progress via the calendar of events, and for collecting and processing data, should have been a staff-designated responsibility for which process objectives were written. These vital activities are a part of the formative evaluation.

Figure 6 indicates the major areas of consideration

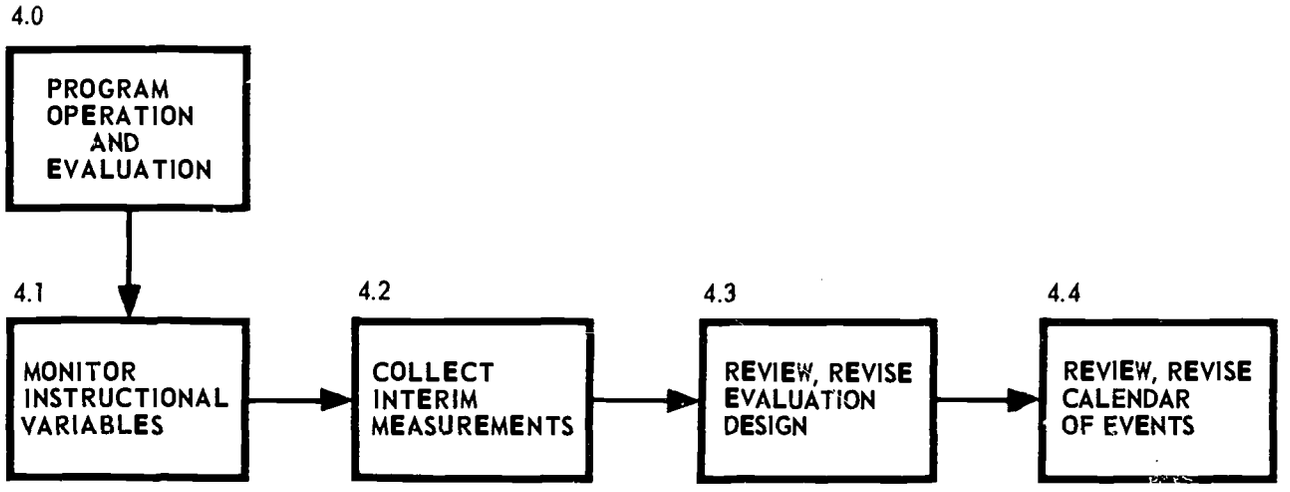


FIGURE 6: Program Operation and Evaluation

during program operation. In the evaluation model (see Figure 8), this is the *implementation* phase of evaluation.

Any necessary variations in the way pupils are organized in the classroom or variations in content, method, or facilities should be noted for future reference and reporting. One purpose in monitoring is to control the variables in a prudent fashion.

Cost records should be maintained as accurately as is practical for accounting purposes.

Collecting interim measurements may consist of criterion-referenced tests (from an item pool), teacher-made tests and other planned instruments.

While good planning should provide the basic parameters, anything as important as evaluation should always be open to improvements from new insights, hence review and revise as necessary.

No person or persons can foresee all pertinent activities; hence the calendar of events review and revision is always appropriate.

ANALYSIS OF EVALUATIVE DATA
(Step 5.0)

The major considerations in the analytic stage of evaluation are outlined in Figure 7. These steps are listed under *Measurement of Objective Attainment* in the evaluation model. (See Figure 8.)

In this stage of the evaluative process (the summative stage), post-program data are analyzed and compared with pre-program data, learner attainment is measured against performance objectives, and recommendations are made for use of these analyses. Attempts should be made to determine the extent to which the objectives were achieved (or not achieved) as attributable to the planned program. Where possible, new program outcomes should be compared to previous program outcomes.

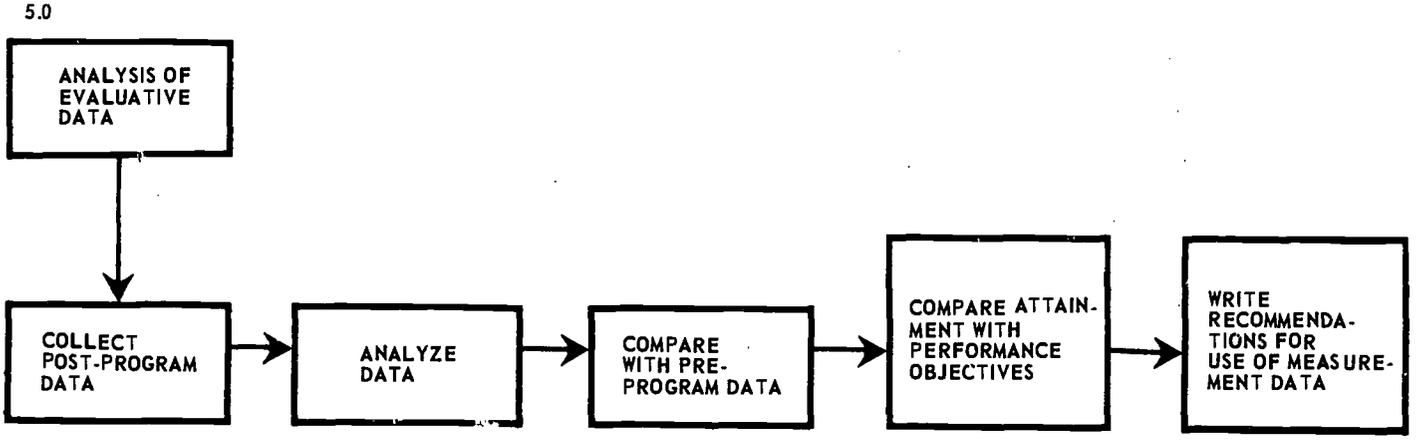


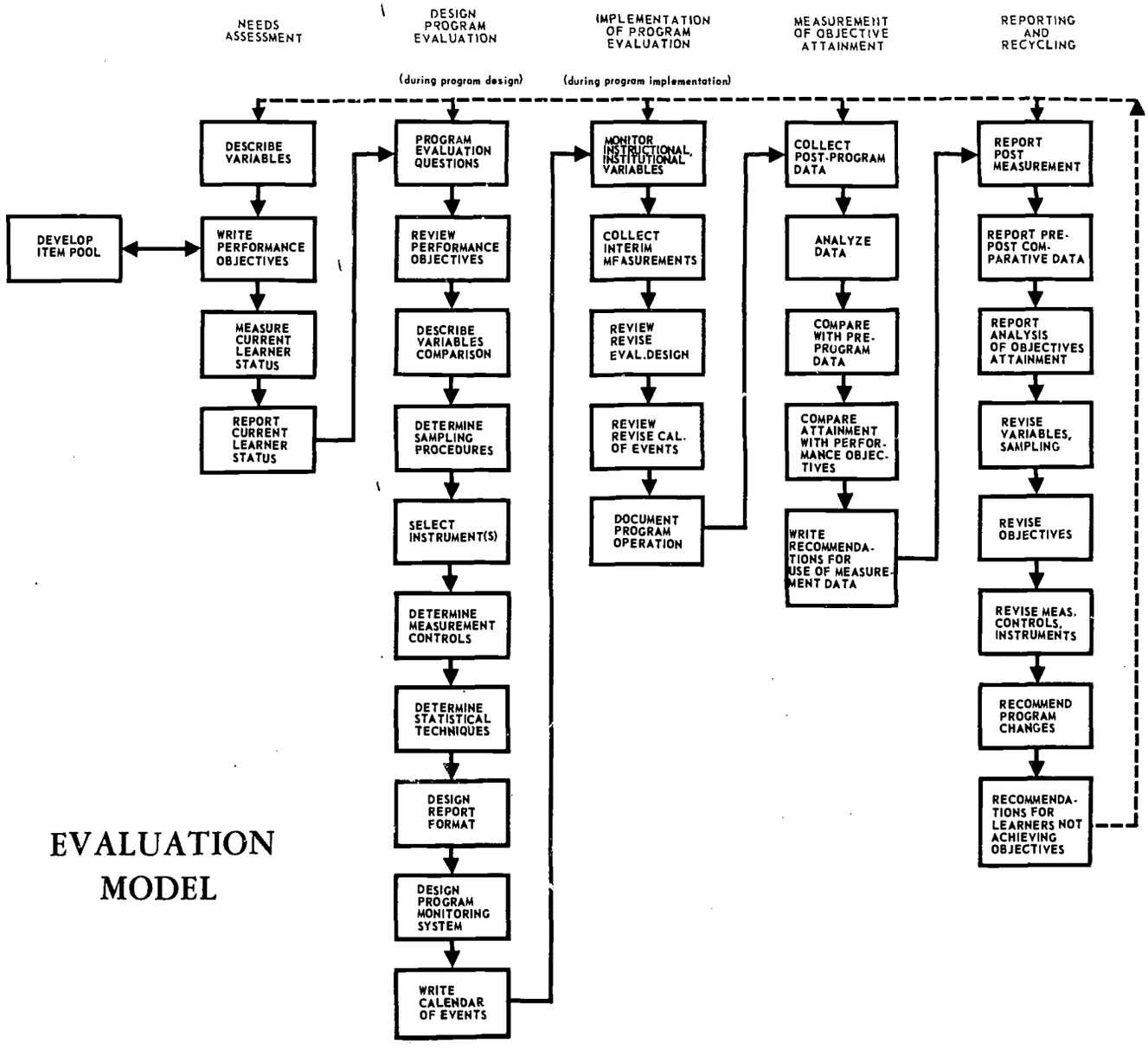
FIGURE 7: Analysis of Evaluative Data

DISSEMINATION
(Step 6.0)

Dissemination of pertinent information (including recommendations for program changes) to appropriate publics is an important and often poorly implemented phase of the operation. Specifications should be drawn up in the planning stage by a task force and reviewed for adequacy during the operation and before release. A written report to the decision makers should include precise information and interpretations supported by explanations for any modifications which occurred during operation. Recommendations and the bases thereof for further modification and continuation of the program are appropriate. (See Figure 9.)

Certain information will be channeled to or through the institution's Educational Management Information System (EMIS) for analysis and synthesis. The EMIS has a storage and retrieval function vital to future programming as well as to programs in progress. Some information will be subject to dissemination upon short notice because of its timeliness. Certain information should be fed back to participants throughout the progress of the seven basic steps outlined in the planning and evaluation model.

Dissemination to interested publics of categorized findings, at the end of a cycle, is a vital process which should be determined by a task force in collaboration with the EMIS director. Figure 9 suggests a possible



EVALUATION MODEL

FIGURE 8: Evaluation Model

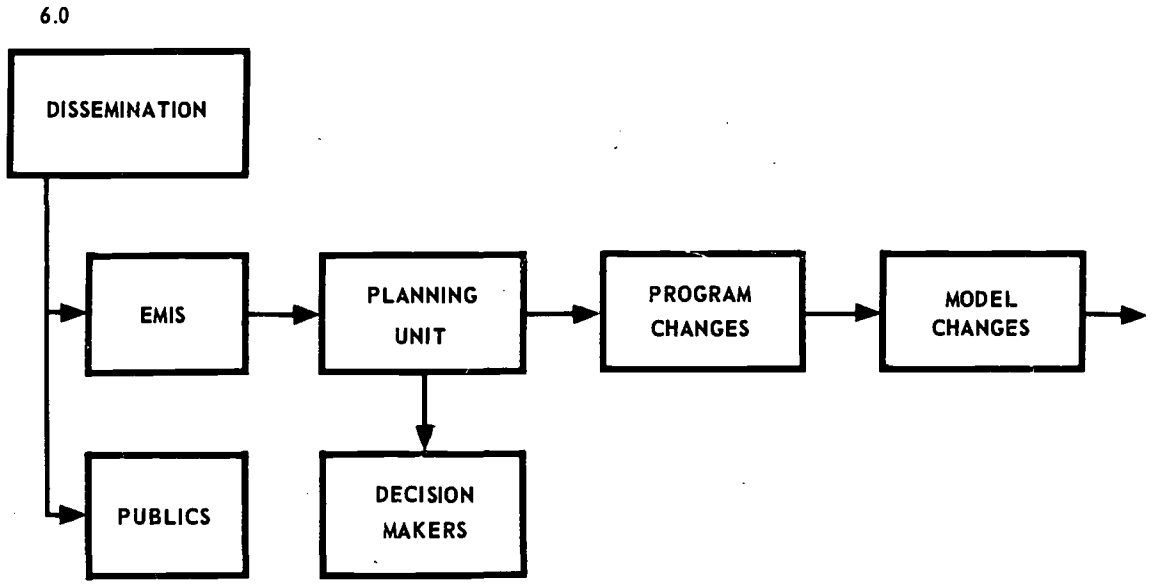


FIGURE 9: Dissemination

flow of information. The model is subject to considerable elaboration or modification in terms of committee and task force assignments and reports.

So far as program evaluation is concerned, the dissemination of data should contain the following reports and recommendations:

1. Any post-program measurement information.
2. Comparisons of pre-program and post-program measurement.
3. Analysis of objective attainment.
4. Revisions of program variables and sampling methods.
5. Revision of performance objectives and process objectives.
6. Revisions of measurement controls and instruments.
7. Program changes.
8. Recommendations for students not achieving performance objectives.

It is pertinent to consider feedback from the various publics and decision makers for application to continued assessment and planning. There is no definite termination of feedback between steps. Feedback is always a vital ingredient to program success.

RECYCLING
(Step 7.0)

This step involves obtaining the agreement of appropriate decision makers to recycle the program with any modifications deemed necessary. It is pertinent to remember that recycling involves a review of the goals and performance objectives plus the needs assessment and problem definition steps. While these processes should be much easier to expedite when recycling, they are, nonetheless, vital to continued program development. In short, recycling involves thorough review and possible revision of every aspect of the system. Too frequently, recycling is erroneously conceived as simply running the old program over again.

Another graphic illustration of the interrelated steps of comprehensive program planning operation and evaluation is depicted in Figure 10.

Note that feedback is continuous, which is also to say that assessment and evaluation are continuous.

Another version of a linear model which embodies the same concept as that in Figure 10 is presented in Appendix C, Figure 14.

CONCLUSION

The model described herein is not intended to be a perfect solution for any and all organizations; rather, the suggested elements are ideas for solution strategies.

Other alternatives must be considered and evaluated in terms of feasibility within the resources available, the operational and social-political environment and the objectives of the planning unit.

To be effective in planning, *some means,* structural as well as operational, should be established which will facilitate the *systematic application of intelligence* to the resolution of problems.

The challenge of management today is to combine democracy and recognition of individual worth with management science technology for the development of

optimum modes of efficient and relevant services. The two must proceed together, and to do so there must be a purpose for each. Without purpose there can be no point to activity. The better the definition of purpose, through goals and objectives, the more distinct and revealing the evaluation. When two or more people are working together there must be agreement on common goals.

The best type of management would be that type which integrates the work of an individual toward the overall objectives of an enterprise, while at the same time considering the individual's personal interests and desires. To accomplish this requires an in-depth definition of the goals and objectives at all levels of the enterprise.

Management by objectives is a planned approach to individual performance within an enterprise. It is the antithesis of management by reaction, where planning (if it occurs) is accomplished immediately prior to or in concert with action. In this latter methodology of management, activity is measured by the flurry of things being done, and the effort that is put forth, rather than by the results they produce. In management by objectives activity is measured by results.

Educational systems are especially vulnerable to intervening social, political, and circumstantial issues and needs. This vulnerability makes it imperative to build into the operational procedures a reasonable system of priority *do's* and *don'ts*. There must be a plan and the will to say we can't do this because there are more important priorities.

In applying this method of management one is concerned with the correlation between work done and the purpose of the enterprise in which it was done. Any work which does not contribute in some way to the overall goals is either misdirected because of the inefficiency of the enterprise to direct it or because someone is intentionally directing it away. Failure for the latter reason is more forgivable than for the former, and both should be eliminated.

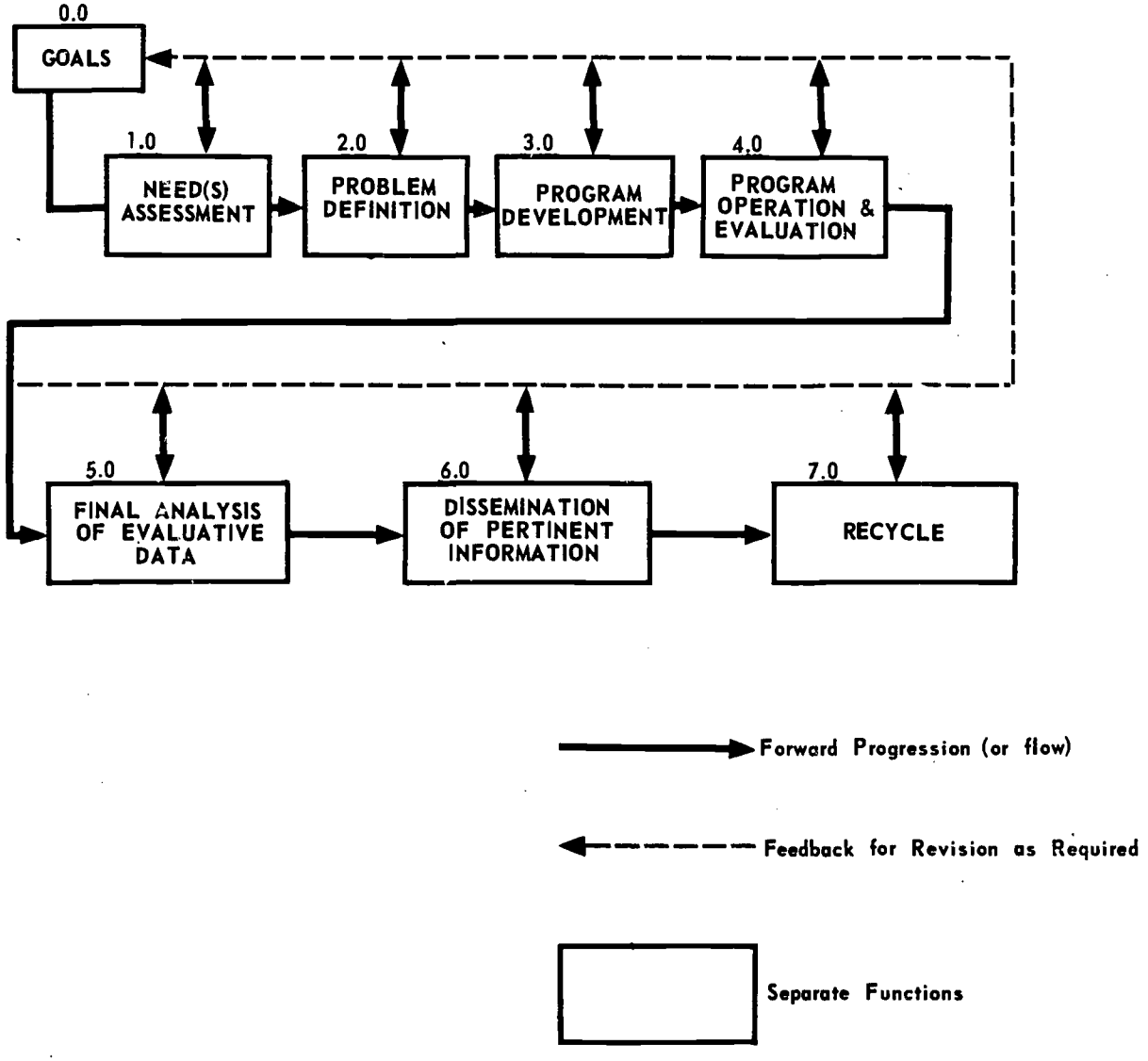


FIGURE 10: Comprehensive Education Program Planning Model

GLOSSARY OF TERMS

Analysis	The process of determining the parts of a structure and the way in which they relate, one to the other and with the total system.
Assessment	Activities which include objective and/or subjective techniques designed to determine educational needs.
Accountability	The responsibility to answer for the results of actions and objectives; the legal and/or moral responsibility to be answerable for the what, why, and how of programs, proceedures, and products.
Comprehensive Planning	Planning which involves: (1) Consideration of all relevant factors (2) participation of all persons who should contribute, and (3) intense, broad, long and short range projection.
Constraint	Hurdles, real or imagined, which may jeopardize the successful accomplishment of any part of the objective.
Define	To state the meaning of, or to describe with *clarity* in relation to, identifiable, tangible, and/or intangible conditions.
Dissemination	The distribution of information about a program, project or activity.
Effectiveness	A quantitative and qualitative measure which can be used to evaluate the level of performance in relation to some *standard* set of criteria.
Evaluation	Activities undertaken in an attempt to determine the value of a program, project, technique, process, or product in relationship to a predetermined objective.
Feedback	The factual and evaluative information which describes the functioning of a system and is used as a basis for modification of the system.
Functions	Those actions which must be completed to accomplish the objective.
Generic	A class of related things having a general application.
Goals	Ends *toward* which an agency or person performs work or renders services; a statement of direction and purpose. A goal is general and timeless in that it is not concerned with a specific achievement within a specified time period, nor is any measurement specified.
Hierarchy	Persons or other entities arranged or positioned in a series of ascending and descending values.
Identify	To recognize by forms, shape, size and/or description.
Implement	To carry out; to apply the time, effort, and materials required to get the job done.
Model	A generic pattern which may be applied to a specific process or a related set of processes.
Need	The difference between what is and what should be.
Needs Assessment	Determination of the difference between what is and what should be.
Objective	Intermediate ends for which work is performed or services rendered; the desired product of an activity representing progress toward goals.
Parameter	One of a set of properties whose values determine the characteristics or behavior of a system.
Performance Objective	A statement that specifies a desired change in behavior on the part of the learner; the statement answers the following questions: 1. Who is going to perform the specified behavior? 2. What behavior is expected to occur? 3. What is the expected proficiency level? 4. Under what circumstances is the behavior going to be observed? 5. What amount of time or necessary prerequisites are needed to bring about the specified behavior? 6. How is the behavior going to be measured?
Planning	Development of the detailed operational guidelines and criteria for use in the implementation of a project or program.
Priority	That which is preferred in rank or position.
Problem	The recognition of a need which requires further study.

Problem Definition	The delineation of the factors *and* influences which contribute to the need.
Process Objective	A statement that describes an *activity* which affects the performance of a learner or results in a desired product—it answers the following questions: 1. What specific activity? 2. Who will be conducting the activity? 3. What time span? 4. What specific, tangible outcome will result? 5. Cost?
Program	A major agency endeavor, goal-oriented, comprising multiple projects and tasks, which is defined in terms of the principal actions required to achieve specified objectives.
Strategy	A careful plan or method.
Syncretic	A harmonious blend of various elements and/or functions for purposes of accomplishing specified objectives or producing desired products.
System	The sum total of parts working independently or relatedly to achieve specified objectives.
Systematic	Acting by a predetermined system or comprehensive method.
Synthesize	To put together in the most relevant manner the parts of a system to achieve determined objectives.
Tasks	Elements of an activity which, when completed, will help complete the activity.
Variable	An element subject to change.

APPENDIX A—EDUCATIONAL VARIABLES

In the process of problem clarification and program planning it is important to consider the major educational variables and to use them to clarify written objectives. This will help to organize the processes and to select evaluation instruments. Figure 11 displays a model of the major variables.[1]

In the institutional dimension, the variables listed are familiar. *Community* may be assumed to encompass those familiar variables such as service clubs, P.T.A., religious, political, and similar groups.

Under the instructional dimension *organization* might mean self-contained classroom, non-graded, departmentalized or other forms of grouping. *Content* is a body of knowledge topically defined, i.e., reading, arithmetic, social studies, algebra. *Method* refers to (1) teaching, i.e., lecture, demonstration; (2) types of interaction; and (3) learning principles, i.e., "cognitive field." *Facilities* means space, equipment, and supplies. *Cost* covers operational expenditures.

[1] *A Scheme for Evaluation and an Organizational Structure of Variables.* Tucson, Arizona: Educational Innovators Press, Inc., 1970. Reprinted with permission.

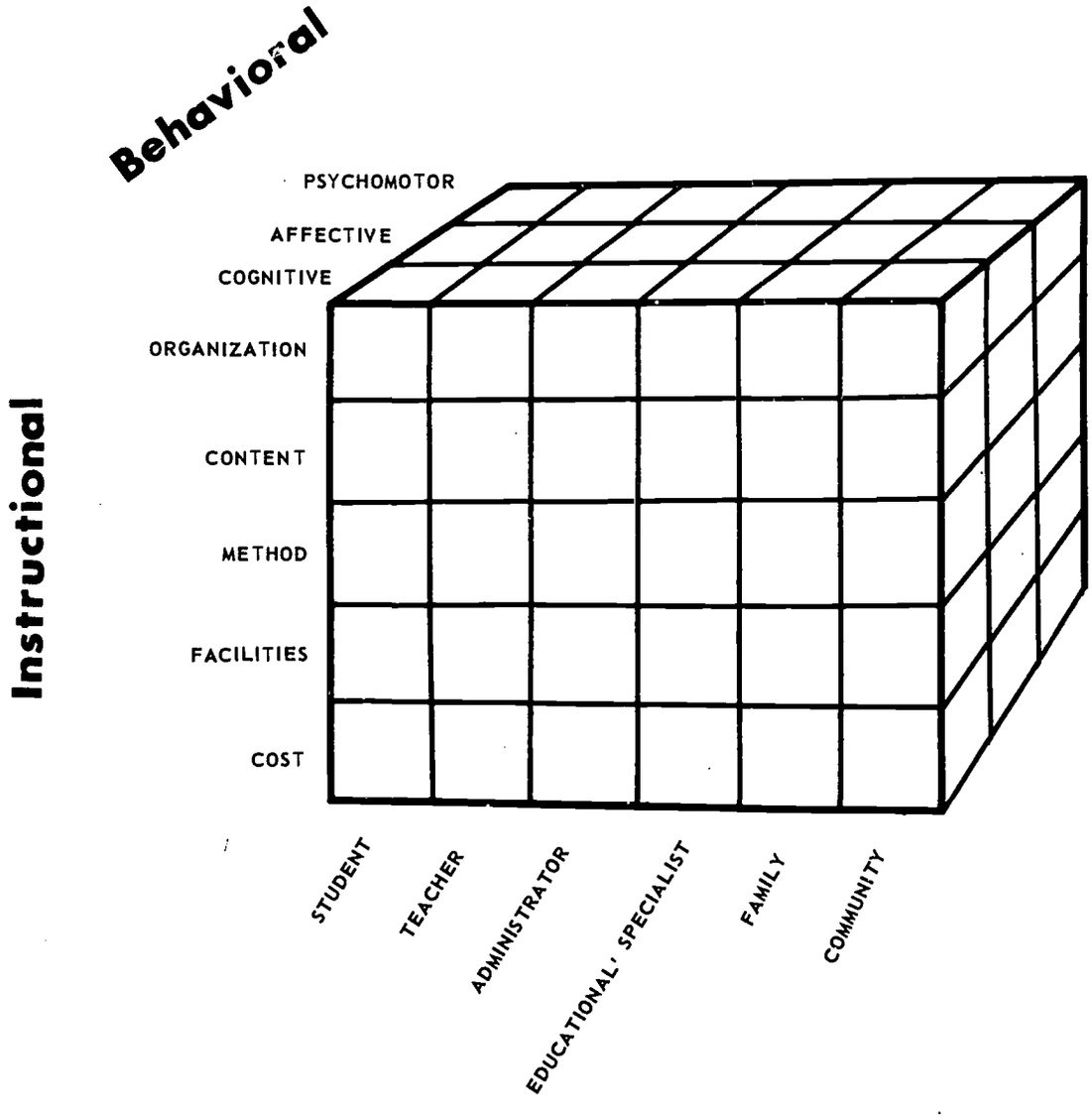


FIGURE 11: An Organizational Structure of Variables Affecting Educational Programs

The behavioral dimension has three variables: cognitive, affective, and psychomotor. *Cognitive* variables include (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis and (6) evaluation, in ascending order of difficulty. The levels of the *affective* behavioral variable are: (1) receive, (2) respond, (3) value, (4) organization and (5) characterization. The levels of the *psychomotor* behavioral variable are: (1) imitation, (2) manipulation, (3) precision, (4) articulation and (5) naturalization.[2]

These variables are relevant in the process of developing performance and process objectives.

[2]*Performance and Process Objectives*, Tucson, Arizona: Educational Innovators Press, Inc., 1970.

APPENDIX B—GOALS AND OBJECTIVES

It is axiomatic that we should know where we are headed (goals) and have some mileposts for measuring our progress (objectives). Not only should individuals know where they are going and how well they are progressing, but their plans and progress should be made clear for purposes of communications and accountability. While goals are, of necessity, broad and general, they are essential to the development of operational objectives. They provide a frame of reference within which we can specify our objectives.

GOALS

A goal is a statement of broad direction, purpose or intent. It is an end toward which the agency performs work. A goal may be general and timeless in that it may not be concerned with a specific achievement within a specified time period. A hierarchical relationship is shown in Figure 12.

For example:

Goal 1. (State) To help every child acquire, to the fullest extent possible, *mastery of the basic skills* in the use of words and numbers.

Goal 2. (Regional) To provide instructional services throughout the region which will assure each child opportunity to develop his reading skills to his maximum capacity.

Goal 3. (School District) To provide instructional services which will maximize the reading level of each and every child in school.

Goal 4. (School) To assure that each child enrolled has a reading level at or above his functional level of capability.

In order for a goal structure to effect continuity of effort throughout the agencies, it is important that goals be related to the area of responsibility of the particular organizational level. A state department goal, for example, should encompass state aspirations in a given area. The district goal should relate to the same concern, but be limited to district areas of responsibility. Likewise, from district to local school—a decreasing scope of jurisdiction and a concomitant specificity of responsibility is necessary. While state goals do not dictate district and/or school goals, they are related and should influence one another. To go below the school level with written goals is generally unproductive. The classroom teacher adopts the school goals and develops a set of related objectives.

OBJECTIVES

The system for developing objectives is similar to that for the development of goals. Objectives can be grouped and arranged in a hierarchy with specific objectives contributing toward broader objectives. An important characteristic of an objective is that it supports a stated goal. The establishment of priorities of objectives is important if we are to meet educational needs in an orderly fashion. There are two major types of objectives appropriate to the activities within a statewide educational organization. These are *performance* objectives and *process* objectives. The significant difference between these two lies in the expected tangible outcome. The activities of administrators, teachers and supervisory personnel call for process objectives.

A process objective has five basic elements:

1. The individual and/or groups responsible for carrying out the activity.
2. The activity, related to a tangible outcome.
3. A time factor.
4. A tangible outcome.

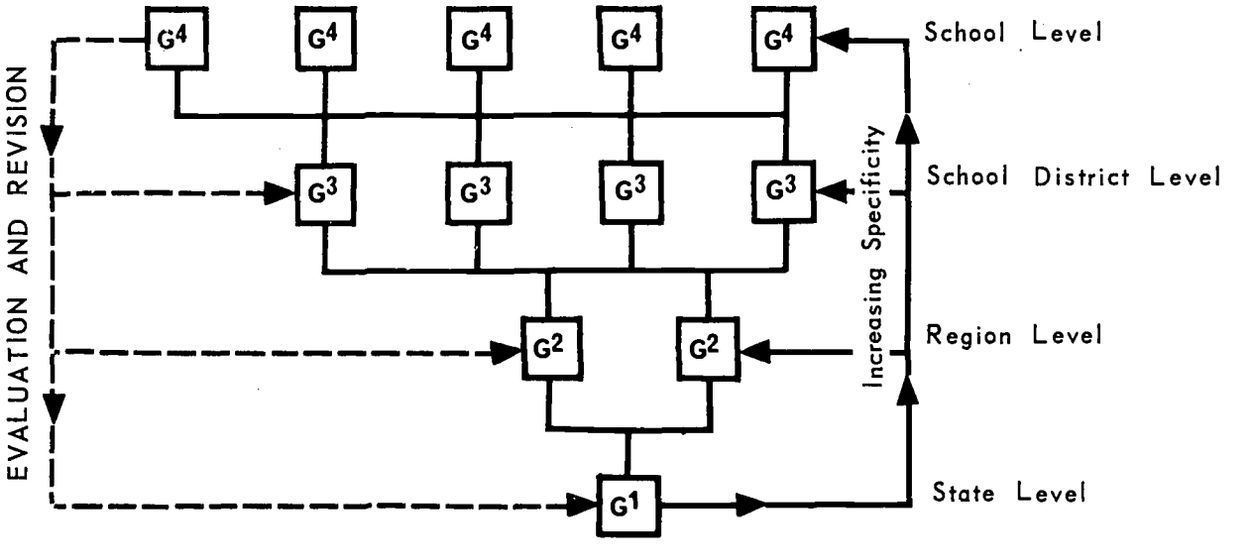


FIGURE 12: Goals Hierarchy

5. A cost estimate.

Process objectives are those activities designed to influence the *performance* of the learners.

A performance objective has six basic elements:

1. The institutional variable (i.e., third-grade pupils).
2. A behavioral variable (i.e., comprehension).
3. An instructional variable (i.e., reading).
4. A method of measurement (i.e., CTBS).
5. Time or prerequisite (i.e., 38 weeks).
6. A proficiency level (i.e., 10 months average increase).

The hierarchical relationships of performance objectives is outlined in Figure 2.

0.1 (State) Upon the completion of the 1971–72 school year, the third-grade students will display a one-year gain in reading comprehension as measured by a selected standardized test.

0.2 (Region) Note: The objective will be the same as the State's except that it may have a higher or lower proficiency level, depending upon characteristics of children and conditions in the particular geographic region.

0.3 (District) At the end of the third grade in school, elementary pupils in district schools will display a 10-months gain in reading comprehension as measured by a selected standardized test. (Note: higher or lower proficiency level depending upon conditions.)

0.4 (School) Upon completion of the 1971-72 school year, the third-grade students will display an 8-month gain in reading comprehension as measured by a selected standardized test.

0.5 (Classroom) At the end of January, 1972, third-grade students will apply selected word attack skills with a minimum of 40 percent accuracy as measured by a teacher-developed test. (Note: There will be several such objectives for reading at the classroom level including one for a standardized test.)

0.6 (Learner) At the end of January, 1972, "Johnny" will be able to read from his third-grade textbook with a maximum of two errors in pronunciation per full page as measured by an informal reading inventory.

With objectives determined at the various levels of specificity and measurement of student status, we can analyze need.

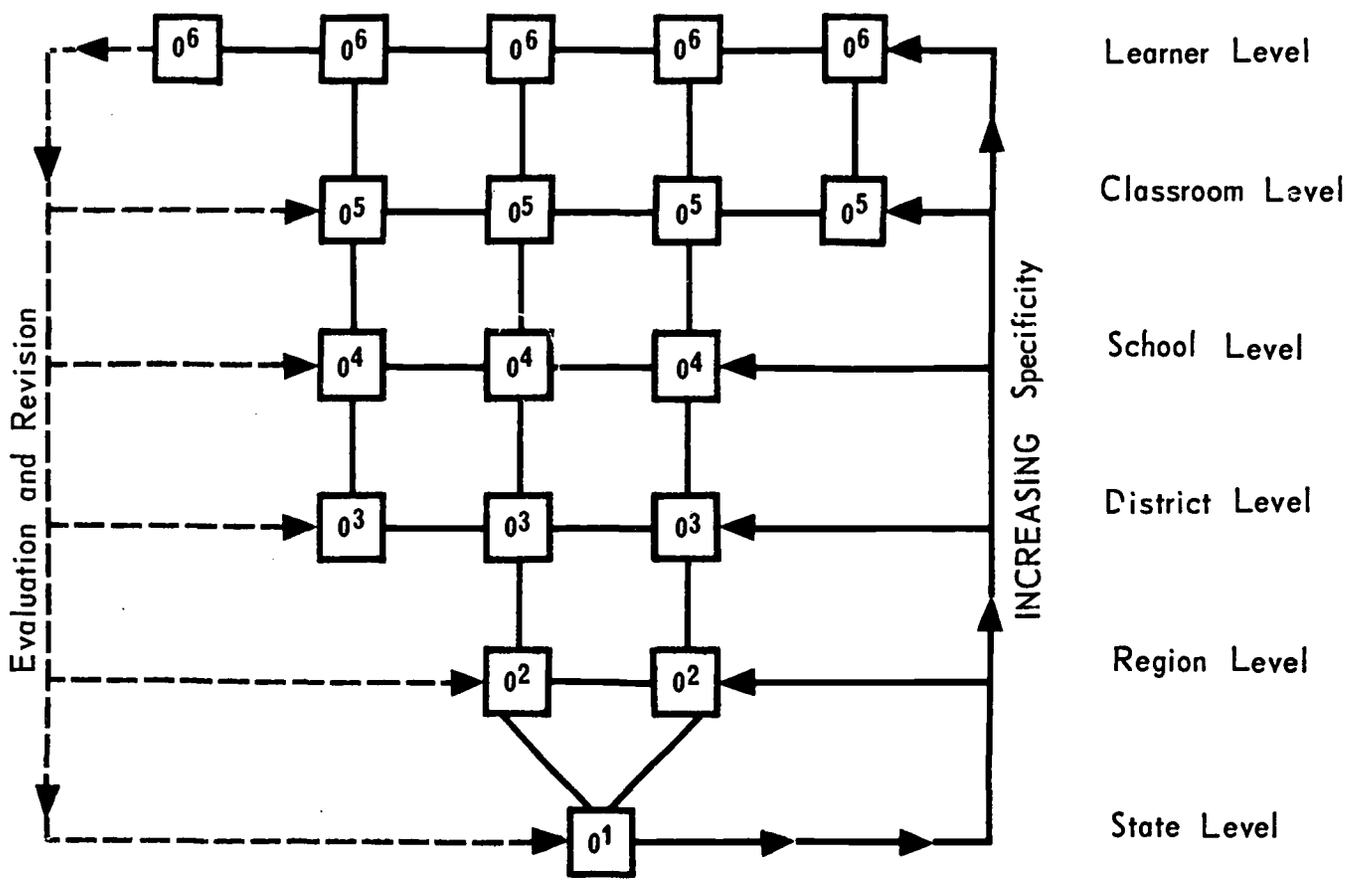


FIGURE 13: Objectives Hierarchy

APPENDIX C—A SYNCRETIC LINEAR MODEL FOR COMPREHENSIVE PLANNING

Contemporary problems, taken in historical perspective, reveal the criticality of good planning. It is revealed in the plights of cities, in the social lag of educational institutions and the complex social and political problems of our time.

The model presented herein, while indicating seven basic steps (as numbered) also shows other intermediate processes which are to be considered vital to good program design and operation. For example: The establishment of goals should include more than verbal discussion, important as that is. The goals should be written, disseminated and interpreted—after a period of discussion.

After a general needs assessment, the identified needs should be listed in priority order; they should be analyzed and defined in a systematic fashion; and solution strategies should be implemented according to priorities, time, and resources. High priority problems should be assigned the resources necessary to reduce the need even at the expense of reduced emphasis on lesser problems rather than proceeding on a broad front with the hope that equal treatment will provide succor to all needs.

Finally, the effects of a treatment program should be carefully analyzed before dissemination; that is to say, perceptual impressions should not become the guidelines of future operations. All evidence should be evaluated against the performance objectives. Program modification is an important consideration based upon the summative evaluation, before recycling.

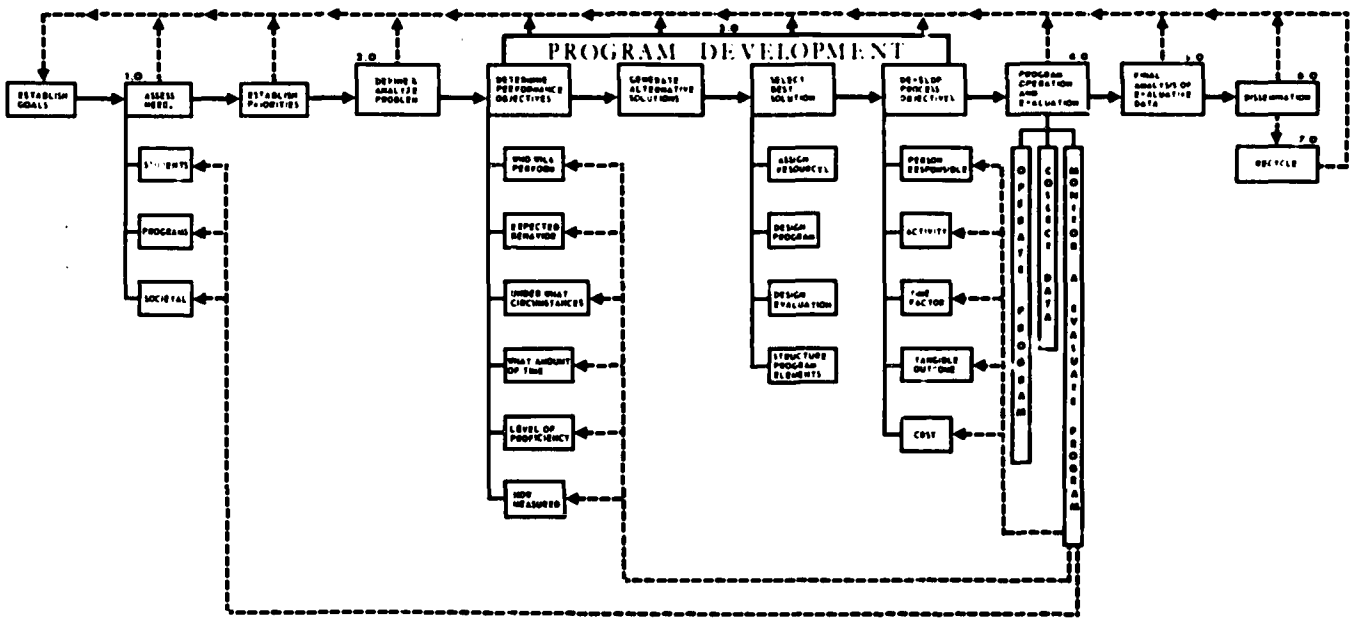


FIGURE 14: A Syncretic Model for Comprehensive Educational Program Planning