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DIAGNOSTIC EVALUATION: TOWARD A NEW APPROACH
TO THE CONCEPT OF EDUCATIONAL EVALUATION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

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* * * * *

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1974

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CHAPTER I

INTRODUCTION

Two movements in American public school education provide the initial basis upon which this study has been conceived and developed. The first is the movement of recent years to reform public education. The second is the effort to reconceptualize educational evaluation. This study is an attempt to develop a concept of evaluation which will be useful in undertakings to reform public education and which will provide a new orientation for conducting and interpreting the meaning of educational evaluation.

Evaluation is one of the essential components in any intelligent effort to reform the schools; the background for understanding this investigation must be drawn first from a brief review of the theme of school reform for the past twenty years. Then, a brief discussion of the reconceptualization of evaluation follows in order to focus the specific problem of the study.

Reform in American Public Education

Looking back at the educational scene of the past two decades, we can admit the fact that it has been a painful struggle for schoolmen to reform various aspects of public education. Since the Russian launching of Sputnik in 1957, major emphasis has been placed on subject matter, especially in science and mathematics. The curriculum
reform movement was marked by an updating of content, a reorganization of subject matter, and some fresh approaches to methodology in fields traditionally taught in the schools (Goodlad, 1966b). The reform was characterized by nationally-known projects such as BSCS (Biological Science Curriculum Study), SMSG (the School Mathematics Study Group), and CBA (the Chemical Bond Approach) which were undertaken mainly by scholarly academicians of colleges and supported by substantial private and public funding.

A second line of school reform may be termed as "organizational change." It has had primarily two facets: breaking the vertical lockstep of classes by nongrading, and varying the range of personnel resources available to a group of students through the change of staffing patterns (Goodlad, 1966b). Such changes have opened up many alternative clusters of programs so that any given student can be assigned to an appropriate group. An increasing number of programs that make schooling more adaptable to differences among students have been proposed and developed. Individualized instruction, for example, has been discussed at length among educators; the major concern has been with the individualization process of instructional programs rather than with the purpose of such practices or consequences of those practices upon the individuality of the learner.

It seems that the past two decades represent one of the most visible and persistent changes in schoolroom practice. School practitioners have employed not only updated content, new instructional methods, and diverse staffing patterns, but have also introduced
modern technological devices, such as teaching machines and computer-assisted instruction, as far as public education allows and supports such efforts.

Another reform thrust is the "free school" or "alternative school" movement during the late 60's. The writings of A.S. Neill, Jonathan Kozol, and many others inspired the movement and have led to the creation of schools outside the public school system (Edmonds, 1971). The "free schools," though they have not gained full acceptance from the general public and educators, have at least demonstrated the idea that education does not have to be as it is in the public schools, and have implied a more drastic change through which the basic assumptions about schooling and about the learner are challenged. Some public schools now follow "alternative school" patterns; the idea posits that schools "are designed to produce more effective learning through offering the kinds of options that allow students to work in a congenial atmosphere while following their own work style" (Phi Delta Kappan, editorial, 1973). Philadelphia's Parkway Program, Chicago's Metro School, and Alternative Programs in Minneapolis are vivid examples of the movement (The National School Public Relations Association, 1972). The National Consortium for Options in Public Education (1973) reports that, nationwide, there are about 600 alternative schools, and 464 alternative schools are included in its directory. Despite the rapid growth in the number of schools which adopt the idea, there is danger that the alternative school may become the fad of the 70's. Riordan (1972) observes that:
As more and more public school systems begin to develop alternative schools, it becomes clear that the movement could easily founder in either of two basic ways: faddism or the repetition of mistakes. Given the American tendency to market new educational and other ideas on a mass scale, there is a clear danger that many systems will adopt alternatives as their next pet project, hopefully with grant money, without considering some of the basic criticisms of traditional schools that motivated the early alternatives (p. 41).

Criticism of formal schooling and the advocacy of a more humane approach through the design of schools to meet the needs of individual students as in alternative schools are nothing new. After twenty years of reform movement, some educators have reached a conclusion similar to that of Silverman (1970):

...the reform movement has produced innumerable changes, and yet the schools themselves are largely unchanged...things are much the same as they had been twenty years ago, and in some respects not as good as they were forty years ago, when the last great school reform movement was at its peak (pp. 158-9).

It appears to be very critical for educators to probe the root of the problem and to accept the challenge of confronting the issue at a more fundamental basis. Williamson (1971) argues as follows:

The fundamental crisis of public education today is not only one which calls for a change in schoolroom practice, but also one which demands a strategy for assigning a central role to the school in a process of continual, self-conscious search—a process which, relative to individuals, might be classed as a process of personal inquiry (p. 18).

It is believed that educators are beginning to understand that a more wholistic approach that considers every component of a system
and a strategy that provides continuing inquiry are essential in reforming our schools. Reforming a school may in fact call for a new definition of "school" which has not yet been conceived of by many educators.

Recently there have been some ambitious, strategic attempts to reconstruct schooling to serve such ends. The development of a "clinical school" at John Adams High School (Schwartz, 1971; Wertheimer, et al., 1970) is one. A School for Tomorrow (Frymier, et al., 1973) is another proposition. "Experimenting Schools for Adolescents" (Smilansky, Sanders, and Coleman, 1973) is still another proposal in which a school is viewed as a social system which takes the responsibility for trying to develop individual learners who can cope with the modernizing society. These three examples are not the only such propositions, nor are they similar in nature; however, they share a common viable strategy for school reform. The common characteristics among these examples are the following.

First of all, the propositions they are offering assume not only specific new forms of school practices but also a way of experimenting or inquiring about those propositions in order to improve these practices continually. The second characteristic is their prime concern with the individual learner, belief in the potential of an individual, and the emphasis on autonomous individual development as the highest priority. Another feature which seems to be a fundamental basis for experimenting or inquiring is a new perspective on evaluation. These formulations do not hesitate to include evaluation as a central, ongoing activity of schools.
Having this general picture of schooling in mind, we will at this point give more explicit attention to the concept of evaluation.

**Changing Concept of Evaluation**

The reactions of schoolmen to evaluation activity have generally been negative. John Bremer, founder of the Parkway Program, expresses his skepticism about the value of evaluation, saying that "anything worth evaluating cannot be evaluated and anything that can be evaluated is not worth evaluating" (The National School Public Relations Association, 1972, p. 53). Bremer's position would be viewed by many advocates of evaluation as extreme; however, a close examination of some approaches to evaluation would indicate that his position is not completely unfounded. In order to delineate the problem to which this study is addressed, it will be important to examine the concepts and definitions of evaluation briefly, and to review the reasons why they are not entirely acceptable for the purpose this investigation envisions.

The purpose of evaluation, as it is most frequently used in a school, has been primarily the grading and classifying of students (Bloom, Hastings, and Madaus, 1971). Such a practice of grading has been severely criticized. Bebell (1967) argues that "course grades should be replaced with something more informative, more diagnostic, and more harmonious with students' own motivations" (p. 45). Grades not only provide little information either to the learner or to the teacher, but they also do damage to the learner's self concept when
grades are used as competitive measures of success or failure in his school life (Holt, 1964).

Another stream of thought has been a measurement-oriented definition of evaluation (Thorndike and Hagen, 1961; Ebel, 1965). The inadequacy of such a narrow definition of evaluation and of the use of research models in making decisions for educational programs has been pointed out extensively by Stufflebeam and others (1971).

Many people in educational evaluation nowadays appear to view evaluation in a broader perspective and agree to multiple roles or purposes of evaluation (Tyler, 1966; Scriven, 1967; Wilhelm and Diederich, 1967). For example, Scriven's notion of formative and summative evaluation distinguishes two major roles of evaluation, with formative evaluation being conducted to assist in improving the process of program development, and summative evaluation to assess the overall impact of a program. A lot of attention has been paid to the formative aspect in such concepts as process evaluation (Stufflebeam, et al., 1971), evaluation for course improvement (Cronbach, 1963), and efforts in curriculum development.

Although these relatively new concepts have been adopted by educators at research and development laboratories and in federally-funded projects, the methodology for applying such concepts largely remains little improved or inadequate (Finn, 1969; Campbell and Beers, 1971). Moreover, the emphasis on evaluation serving mainly administrative, high-level decision making have, at least to this investigator's observation, turned a large number of classroom teachers and
concerned educators away. Those concepts have paid little attention to an individual learner as a decision maker and accordingly, how to obtain and provide information for the choice-making of the learner has rarely been discussed. Even in a case where outcome variables of the learner are assessed, data are usually aggregated to assign labels to a group of students and, therefore, they hardly indicate the meaning of the data or the inner dynamics involved under the labels.

Bloom, Hastings, and Madaus (1971) present "diagnostic evaluation" as a third type of evaluation in addition to formative and summative evaluation. They tend to view evaluation primarily in the context of teaching and learning, and provide some practical ways of doing evaluation in different subject areas. According to them, "the two purposes of diagnosis--either to place the student properly at the outset of instruction or to discover the underlying causes of deficiencies in student learning as instruction unfolds--distinguish it from other forms of evaluation" (p. 87). A need for diagnostic evaluation was clearly indicated, but the treatment of the concept was not sufficiently comprehensive.

A tentative conclusion is reached that reordering of our thinking and behaving in regard to evaluation is critical not only as a fundamental vehicle for the strategic reform of our schools but also for a meaningful evaluation practice in classroom settings in general. Somehow, the learner has to have the opportunities to express and evaluate how he thinks he is doing or achieving, and such data must be part of
the larger diagnostic data on his being, his classroom, and his school climate.

"Dynamic diagnosis" in the proposal for an International Association of Experimenting Schools for Adolescents (Smilansky, Sanders, and Coleman, 1973) or "Evaluation-Diagnostic Model" in A School for Tomorrow (Duncan, Johnson, and Schneider, 1973) share this idea with the investigator to some extent and suggest a fresh look. Especially, the model developed by Duncan and others lays out an approach of treating the evaluation-diagnostic process in a more intuitive way than in most approaches. There still is much room for conceptualizing and operationalizing the concept of diagnostic evaluation. There is no doubt that the current concept and methodology are useful for such efforts but a different look in regard to the meaning of evaluation, purpose, and means of doing it is crucial also.

The Problem Under Study

An attempt will be made in the present study to conceptualize a type of evaluation, "diagnostic evaluation," as an alternative to the extant evaluation concepts. A major challenge faced in the study is to find an optimum balance of perspectives that integrates all appropriate conditions into significant patterns. The finding of balance is essentially a design problem which, according to Huebner (1970), is "best considered with an aesthetic rationality" (p. 142). If one is concerned only with rationality, it is easy to assume that evaluation is basically a systematic operation with linear relationships between objectives, criteria, outcomes, and judgments. An awareness
of the aesthetic quality of design helps one recognize that a viable design must reflect "the life of people responsible for it and the life in the surrounding communities of knowledge, social action, and technology" (Huebner, 1970, p. 150).

Balance must be achieved first through a conceptual integration of evaluation and diagnosis. The term diagnostic evaluation has previously been suggested as a type of evaluation which can be different from other types of evaluation. However, we do not know enough at this time as to what basic characteristics might be different when an evaluation is "diagnostic." The balance in this respect can be viewed as a conceptual fusion or integration of the diagnostic aspect with the evaluation process. Diagnosis is, according to Brueckner (1935), "a logical process based on a consideration of all the available data concerning a particular individual or group of individuals" (p. 1). Having a logical process requires knowledge of human behavior and social behavior, and the techniques by which one discovers both strengths and weaknesses of the individual as a basis for more effective guidance at each stage of development. The procedures of medicine, clinical psychology, and other areas suggest approaches to educational diagnosis. However, the precision of the diagnostic or evaluative process largely depends on the precise knowledge we have on the learner, classroom behavior, and schools. Development of a diagnostic evaluation process may have to start with pointing out the "unknown" steps and logical gaps between one evaluative stage and the next, and proceeding to build steps by their proximity and logic. From the work of
Kuhn (1962) it is apparent that reformulation of a process can result from knowing incomplete or inadequate processes: the incompleteness opens the way for the development of new processes.

The problem under study also has to address itself to the question of entity or objects diagnosed and evaluated. The term evaluation is meaningless unless there is a thing, a person, or a program to be evaluated; and the process of evaluation takes various forms, depending on the objects chosen. It is necessary, therefore, to identify the primary entity of diagnostic evaluation and conceptualize it properly. Balance here again has to be found between the role of growth potential of the human being and the role of educational environments. In this study, the person or client is chosen as the primary entity of diagnostic evaluation. This can be seen as a deliberate effort to achieve balance by emphasizing the growth potential of the human being. Ideally, a learning environment, including evaluative practices, should stimulate the student's growth, and the learning environment should be designed to foster such stimulation. Understanding the psychological and social "state" of the individual's "being" and the environment within which his "being" is formed must be explored through diagnostic evaluation.

The following statement made by John Dewey (1961) may be noteworthy. "...the only way in which adults consciously control the kind of education which the immature get is by controlling the environment in which they act....We never educate directly, but indirectly by means of the environment" (p. 19). A focus on "state of being"
permits one to look at the learner's engagement with his environment, and that in turn helps us to design an environment more facilitative to learning.

Objectives of the Study

In order to deal with the problems framed above, three developmental steps or objectives are identified.

The first step is to analyze major concepts of evaluation and diagnosis through an extensive review of literature on these topics. At the outset, several questions will be raised, each of which should open up ideas, concepts, and controversies for educators and evaluators. The intent is not to provide answers but rather to capture the level of awareness of a variety of concerns and attempts that must be known prior to developing a concept for diagnostic evaluation.

The questions which represent a central basis for the review and organization of pertinent literature include:

1. What is evaluation/diagnosis—the question of definition.
2. What purposes are to be served by evaluation/diagnosis—the question of purpose.
3. What to evaluate/diagnose—the question of entity of evaluation/diagnosis.
4. How to evaluate/diagnose—the question of means for evaluation/diagnosis.
5. What is the nature of the role of a specialist in evaluation/diagnosis—the question of a specialist role.
6. How can the evaluation/diagnosis information be used effectively—the question of utilization of information.

Areas identified for review include: educational evaluation, clinical psychology and psychiatry, medicine, special education, and counseling. The main focus of the review will be on the potential utility in educational settings rather than substantive knowledge in these areas. It is also assumed that each area will contribute to the conceptual fusion between diagnosis and evaluation from different aspects, depending on the disciplinary orientations. The products of this phase of the study will be a comparative presentation of representative models of evaluation and diagnosis, and a synthesis of ideas and theories on the questions raised.

The second objective is to establish a reality base for developing a functional concept through the experience with the school staff. A high school located in central Ohio was chosen as a field site. In that school, a group of teachers formed a task force to explore the problem of "turned-off" students. The term "turned-off" was chosen by the local school participants and was related to the phenomenon which could be generally classified as students' maladjustment to, alienation from, or inability to fit into school. An opportunity was given to the investigator to help the staff task force as a consultant in defining more fully what "turned-off" was operationally to mean, in developing a procedure for diagnosis, and in obtaining and/or devising proper techniques for the purpose.

The relevance of the experience with the school to this study was two-fold: one was to probe, simultaneously, the compatibility of
theoretical positions with practical procedures used in the field site, and the other dimension was to gain understanding of "know-how" in terms of professional roles for a teacher diagnostician and a consulting diagnostician, and feasible mechanisms for implementation of an evaluation concept.

Finally, the third objective of the study is to develop a concept of diagnostic evaluation drawn from the understanding gained through the two previous steps: one provides theory-based knowledge from the literature, and the other field-based insights from the author's experience. These two knowledge bases, however, are not sufficient unto themselves to generate a new concept; the concept also has to be value-based. This is required because without a value frame, a conceptual design could easily lose directionality in the designing process and become meaningless. The positions taken by humanistic psychologists and especially by Ross Mooney with regard to the nature of man provide a perspective for the author within which a notion of diagnostic evaluation can be conceived.

In summing up, the notion of diagnostic evaluation has grown out of three broad bases of understanding: theory, field experience, and values. The conceptualizing process is also seen as a developmental process of the author herself, who will be the center of this total investigation.

The significance and utility of the concept need to be judged through the process of development. The criteria for judging and therefore for guiding the development of the concept are:
understandability, (2) generality, (3) feasibility, and (4) balance. The work should be understandable to the people engaged in the educational endeavor; it should be general enough to assist in evaluation activities throughout educational programs at secondary schools; it should be feasible enough to guide actions in educational practices; and it should achieve a balance between rationality and aesthetic quality in design.

Organization and Limitation of the Study

The second chapter of the study deals with an analytic review of literature which is pertinent to the concept of evaluation and diagnosis. Questions raised earlier in this chapter will identify the major areas of the review and will serve as a guide for organizing materials from various disciplines. This chapter will provide theory-based knowledge.

Chapter III includes the main body of discussion on diagnostic evaluation. The essence of diagnostic evaluation is characterized by: (1) its primary focus on the person's state of being, (2) its emphasis on the immediate view of behavior, (3) its natural process in diagnosing and evaluating, (4) its inclusion of the concept of adequacy as a source of criteria, and (5) its acceptance of adolescents as participants in the process. An elaboration and clarification of these ideas will answer the central question, "What is diagnostic evaluation?" In order to translate these ideas into operational forms, the process of diagnostic evaluation is extended to include three types:
sequential, differential, and dynamic. Strategies for the implementation of diagnostic evaluation are also considered in this chapter. Chapter IV explores the meaning of diagnostic evaluation as it is formulated through working with a school. A description of the project and the field site is presented. An analysis and interpretation of the project experience is followed by a discussion of the problems that may arise in implementing diagnostic evaluation.

This study is summarized and recommendations are made in the final chapter.

Before we move into the second chapter, it may be necessary to state briefly the limitations of this study. First, this study is theoretical and developmental in nature. It is an investigation based on analysis of research studies, current literature, and limited experience with a local school. The concept diagnostic evaluation presented has not been subjected to empirical validation. At a later date, the concept itself or portions of the concept may be field-tested under appropriate circumstances; however, that will constitute another research endeavor.

Another limitation is the choice of a school setting with which the investigator had been working. Since the concern has been focused on the high school level, discussions on individual development will center around adolescents and secondary schooling. Thus, theoretical formulations to be drawn from this study may not be applicable to early childhood or elementary education.
CHAPTER II

PRIOR QUESTIONS

The accelerating development of conceptualizations of educational evaluation has led to numerous writings on the concepts, models, and techniques of evaluation. These writings have generated controversies about the varied meanings of evaluation and about the legitimacy of relevant methodologies among specialists in the field. This chapter is an analytic review of the literature on evaluation and diagnosis in which ideas from various perspectives are reviewed, centering around basic issues and prior questions which are considered fundamental to evaluators as well as to educators.

The focus is on the current state of the art in evaluation appearing in the literature in the late 1960's and the 1970's although some attention has been paid to writings of the 1930's and thereafter. The intent of this author is to capture the level of the present status of the knowledge in evaluation and to interweave that knowledge with the notion of diagnosis. It has to be noted that integrating two different concepts is not a simple additive process since each concept has a different origin and pattern of its development. For instance, the term diagnosis has been associated often with disease, deficiency, and difficulty, while evaluation has been used in association with the ideas of judgment, decision making, and
growth. However, the basic forms of diagnosing and evaluating seem to be similar in terms of logical processes and techniques for gathering information.

This chapter consists of five main sections, each of which deals with one of the organizing questions raised previously except the fifth section, which treats the last two questions together. In each section, readers may notice that attention is paid to the literature on evaluation first and then that of diagnosis. The questions are restated here before beginning discussion of each.

1. What is evaluation and diagnosis?
   One of the crucial tasks by which basic elements of evaluation and diagnosis are identified and functional relationships among the elements are found is through defining the terms evaluation and diagnosis.

2. What purposes are to be served by evaluation and diagnosis? The question of purpose or goal for doing evaluation and diagnosis is the second area of concern for evaluators and diagnosticians. The question of "why" may establish a context for educational efforts and may provide a direction for them.

3. What to evaluate and diagnose?
   This question deals with the entity or object of evaluation and diagnosis. The primary focus may include individuals in educational processes, educational programs, and educational systems.
4. How to evaluate and diagnose?
   The question of "means" for evaluation and diagnosis implies at least a general logic or process to be followed and measurement techniques for data collection.

5. What is the nature of the role of an evaluator and a diagnostician?
   The question seeks to clarify the professional role of an evaluator and a diagnostician, and the relationship between the specialists and the clients. Also related are the tasks and the suitable personnel who may undertake the tasks in the school situation.

6. How can the evaluative and diagnostic information be used effectively?
   The issue is the utilization of information obtained through evaluation and diagnosis.

The Question of Definition

Many theorists in the field have attempted to define the term evaluation. Attempting to do so seems to be useful to the theorists in clarifying what is meant by the term. To the practitioners of evaluation or educationists in general, defining evaluation may be entirely too much fuss.

There are at least three reasons why an attempt to define evaluation is and can be worthwhile. First, the concept of evaluation
has been changed to some degree during the past two decades and it is important to consider the different definitions of evaluation. Second, in education it is important to understand and share the particular semantic values which a specific term may have. Clarification of the meaning of terms chosen is essential in contributing to the building of a generalizable theory. Third, once a concept is defined and communicated as it is intended, it could provide a guide for conducting evaluation activity. We have to realize, however, that knowing a definition of evaluation and doing an evaluation act according to the definition are two different things. We cannot assume a good definition of evaluation will lead to a good evaluation act, but making a definition of evaluation available may increase the probability of using the concept appropriately.

At least three different schools of thought about how evaluation should be defined have existed for the past three or more decades in education (Stufflebeam, et al., 1971; Worthen and Sanders, 1973). One of the early definitions of evaluation, emerging from the measurement and testing movement in the twenties and thirties, equated evaluation with measurement. This definition of evaluation is still advocated by many measurement specialists such as Thorndike and Hagen (1961). The formalization of school and university accreditation procedures led to another definition of evaluation which is treated as synonymous with professional judgment. The strategy is currently used in many evaluation practices where judgments are based on opinions of experts, whether or not the data and criteria for those judgments are clear.
A third definition of evaluation was used during Ralph Tyler's work on the Eight Year Study of the 1930's. In his work, evaluation was defined as the process of comparing performance data with clearly defined objectives.

During the last decade, new definitions of evaluation have emerged. Most evident is that these definitions of evaluation are viewed as a process of collecting information to assist decision making about an educational program. Cronbach (1963) for example defined evaluation as "the collection and use of information to make decisions about an educational program" (p. 672). A more elaborate definition is found in the work of Stufflebeam and others (1971). Evaluation, as they define it, is "the process of delineating, obtaining, and providing information for judging decision alternatives" (p. 40). Similar to the above definition is that of Alkin (1969), stating:

Evaluation is the process of ascertaining the decision areas of concern, selecting appropriate information, and collecting and analyzing information in order to report summary data useful to decision makers in selecting among alternatives (p. 2).

These definitions rest upon the assumption that one of the important functions evaluation can serve is the facilitation of decision making. At the same time, it is implied that decision making is a rational process in which evaluative information can be used to help the process. The preceding assumptions are persuasive, but they tend to lead our focus to where decisions are made rather than evaluation per se. In other words, it is believed that decision making may
not always be the main function of evaluation. To the advocates of decision-oriented evaluation, practicality has been considered as a very important criterion of evaluation activity; and the fact that an evaluation theory can be built exclusively on decision theory has brought limitations conceptually as well as practically.

According to Scriven's terminology, they may have been so involved in distinguishing different roles of evaluation that they do not see the goals of evaluation which are always judgments of the worth or merit of a thing. Evaluation, according to Scriven (1967), is a methodological activity which consists simply

...in the gathering and combining of performance data with a weighted set of goal scales to yield either comparative or numerical ratings, and in the justification of (a) the data-gathering instruments, (b) the weightings, and (c) the selection of goals (p. 40).

Scriven further argues on another occasion (1970) that "evaluation is one of the fundamental tasks and obligations of science, both pure and applied, whether or not one accepts the view that it is part of effective description" (p. 53). Scriven did not make the definition of evaluation clearer in this statement than in the previous one, since it was mainly a charge against Bloom's assertion (1970) that evaluation is securing evidence on the attainment of specific objectives of instruction. The main point Scriven was trying to make is that the fundamental nature of evaluation is judgmental, threatening, and value-loaded. Worthen and Sanders (1973) also view evaluation from a judgmental point and define evaluation simply as "the determination
of the worth of a thing" (p. 19). Worthen and Sanders further elaborated that it includes obtaining information for use in judging the worth of a program, product or objective, or the potential utility of alternative approaches designed to attain specified objectives. Stake (1967a) takes a similar position, but is slightly different from Scriven, and Worthen and Sanders. According to Stake, evaluation is description and judgment, both of which have to exist to conduct evaluation. Definitions within this framework focus on direct assessment of worth and on value judgments that seem to be more closely related to the basic act of evaluation than any other definitions. However, the methodology for assessing validity of judgments and assigning weights to criteria still remain to be developed.

Many educators still view evaluation mainly as the comparison of student performance according to the objectives of instruction, as in the Tylerian definition (1942). Metfessel and Michael (1967) presented a similar view in their paradigm for the evaluation process. Bloom, Hastings, and Madaus (1971) refer evaluation to "the systematic collection of evidence to determine whether in fact certain changes are taking place in the learners as well as to determine the amount or degree of change in individual students" (p. 8). Naturally, the focus of this approach is on instructional objectives, especially objectives stated in behavioral terms. The definition of evaluation tends to oversimplify the evaluation process because there are no provisions for accounting for criteria showing that what was intended in the objectives has actually happened during the instruction; nor
are there provisions for indicating whether there have been other side
effects that were not intended. Even in the cases where student
outcomes indicate the achievement of certain objectives according
to the pre-established criteria, we would not know indeed whether
the objectives themselves are worth pursuing in the first place by
Tylerian concepts. In spite of the conceptual shortcomings these
definitions have, it seems that many practitioners conduct evaluation
within this framework; they may believe that the ultimate criterion
for the success of any educational program is change in student per­
formance and that instructional objectives can provide a basis for it.

There is a dilemma evaluation specialists have to face. They
cannot entirely maintain a definition of evaluation as Tyler suggests,
although in some situations the Tyler model works well. The general
context for educational programs is much more complex than the Tylerian
definition can handle. This is mainly due to the intrinsic limitations
in transforming educational programs into instructional objectives and
also because of the neglect of such program variables as facilities,
efficiency in communication, cost-benefits, and so on. On the other
hand, when an evaluator advocates broader concepts of evaluation,
he often finds himself little equipped to understand operations in
a broader context where evaluation is to be used, e.g., decision-making
processes. Generally, new definitions of evaluation that have emerged
during the past decade have expanded their focus from service for
classroom learning to that of educational programs at the organizational
level, and from the teacher's concern to the school administrator's interest. Lumsdaine (1970) contends as follows:

There is a more humble but equally important form of fine-grained evaluation that can contribute, not to an overall acceptance-rejection decision, but to specific guidance for the teacher or programmer in revising a curriculum, lesson, or program. I would stress the importance of evaluation, not just for deciding whether to throw something out or embrace it with open arms, but for deciding how to improve it, use it, supplement it. This is a 'diagnostic' evaluation, as compared with 'overall' evaluation (p. 67).

What he calls "diagnostic" evaluation looks similar to formative evaluation by Scriven, but the statement can be considered as suggestive in "a form of fine-grained evaluation" that can contribute to specific guidance.

At this point the term diagnosis needs to be defined and the relationship between evaluation and diagnosis considered. Diagnosis, when used in medicine, refers to the concept of disease as seen in a patient as well as to the name given to the disease. Thus, medical diagnosis often involves classification of disease. Wakefield (1955) defines diagnosis as "the art and the science of recognizing the presence or the absence of disease from signs, symptoms, or laboratory data, of determining its character and assigning a name thereto" (p. 1). It is noticeable that the artistic aspect is explicitly recognized in medical diagnosis.

Engle and Davis (1963), clarifying the concept of diagnosis, insist that there should be a basic distinction between diagnosis as
a mental process and diagnosis as the decision reached. Diagnosis, according to them, is defined as "the art, science, or act of recognizing disease from signs, symptoms, or laboratory data. It also signifies the decision reached" (p. 513). The distinction appears to be a valuable one. In reality, it may be difficult to separate the two aspects completely since the decision is the end result of the mental process. Diagnosis as a mental process requires logic, rational thinking, and may be rather simple and static in nature. On the other hand, diagnosis as the decision reached may require little logic or rational thinking, but may be dynamic and functional in relation to the knowledge concerning the object being diagnosed and the experience of the diagnostician.

The National Society for the Study of Education devoted a yearbook to educational diagnosis. Ralph Tyler (1935), in his chapter on elements of diagnosis, states "basically, diagnosis involves two general steps. The first is measurement, or appraisal, and the second is interpretation or inference" (p. 113). His definition simplifies the diagnostic process as two components: descriptive and judgmental. As we examine the basic process of diagnosis, educational diagnosis is not much different from that of medicine. Diagnosis must take a form of description and inference based on the description. The kinds of inferences could be different depending on the stages of diagnosis; inferences may include hypothesizing a cause and effect relationship among various phenomena, finding a linkage between manifest performance
and potentially possible performance, or classifying the phenomena with identifiable names.

Symonds (1931) explicates the meaning of diagnosis from a slightly different perspective, stating that:

The term diagnosis has a variety of meanings. At one extreme it means mere measurement or description—the description of a person's behavior or a person's interests, or of his home...At other times diagnosis means discovery—the discovery of individuals possessing certain characteristics (p. 1).

Havelock's definition is somewhat similar to that of Symonds. Havelock (1970) defines diagnosis as

...a systematic attempt to understand the present situation...a good diagnosis is a description of the client's problem which includes the essential details of symptoms, history, and possible causes (p. 59).

At this point we will consider those situations where the act of diagnosis and evaluation occur in order to compare or contrast the two concepts. There is a fine overlap between the two actions at least from the definitions which have been reviewed here. When either diagnosis or evaluation is called for, there is always some degree of uncertainty about the state of affairs which may be sensed by the individuals involved. The reduction of this uncertainty or approximation of certainty in the phenomenon is the major motive of evaluation and diagnosis. Both evaluation and diagnosis include description as a major activity which requires collection of data through observation, testing, and other techniques.

There are major differences between diagnosis and evaluation in their justification and outcome of the description. In diagnosis,
description is justified by the intent to eliminate problems, diseases, or deficiencies and therefore the description has to take a form of differentiation between strengths and weaknesses, health and disease. The outcome of description in diagnosis is a decision reached and inferred in regard to: explanation of present state of affairs, antecedent conditions or possible causes, and deduction of consequences of the present state of affairs. The decision usually leads to prognosis, which is regarded as a logical extension of diagnosis.

On the other hand, description in evaluation is justified by the intent to provide comparative grounds so that the varied features of evaluative dimensions can be displayed. Description in the evaluation process often tends to make a differentiation between "what ought to be" and "what is," between intent and transactions, between transactions and outcomes, or between alternative strategies. The outcome of the description in evaluation is obviously a judgment of worth or merit based on the comparisons of selected aspects.

The line of thought on two concepts is summarized in Figure 1 on the following page. What makes this conceptual link most meaningful to an evaluation specialist may be that the discovery of the nature of the entity being evaluated has been more emphasized in diagnosis. Discovery, in a sense, is an explanatory system which can be characterized by two main functions. One function is differentiation of attributes within a system or a person. For example, how different attributes or properties of personal functioning of an individual are
FIGURE 1
A CONTRAST BETWEEN DIAGNOSIS AND EVALUATION REFLECTED IN DEFINITIONS
characterized must be known before we evaluate his success in a course compared with another student or with course objectives. The other function of the explanatory system is the establishment of contingencies among antecedents, the present state of affairs, and consequences. Inclusion of such an explanatory system into evaluation may enlighten the process greatly.

The Question of Purpose

Evaluation serves a number of purposes and in general it is not a primary goal of education. The primary goal for a classroom teacher is teaching; the primary goal for a curriculum developer is producing curricular materials; the primary goal for a medical doctor is curing a disease. This is not a position taken but rather a reality that evaluation specialists have to recognize. How evaluation can be an essential, if not primary part of educational processes, is the issue with which this section deals.

From the review of this aspect of the literature, there are generally three types of purposes evaluation can serve. The first type is "expository" (Stake, 1967b); the purpose of evaluation is to acquaint the various audiences with the existing educational programs. Anyone reviewing evaluation reports of Title III, ESEA projects would know, first of all, what each project is like; e.g., what the project is trying to achieve, and what kinds of new technologies and procedures are introduced, who is the target population, and so on. Robert Stake's position is representative of this approach to evaluation, and involves a full description of an educational program based on a formal, systematic inquiry process (Stake, 1967a).
The second type of evaluation purpose would be justification of merit or worth. Scriven (1967) has charged evaluators with obligation for passing upon the merit of an educational instrument. We do not know whether it is desirable for evaluators to judge, yet this responsibility demands an increase in the judgmental aspects of evaluation tasks. Fundamental to the judgment act itself are the criteria for judgment which stem from the selection of certain values.

The third category of evaluation purpose is utility-oriented; the intent is to use evaluation for decision making. Many people in the evaluation field today view evaluation in terms of usage. The most useful and frequently cited distinction is formative versus summative evaluation (Scriven, 1967). This distinction is based on the role evaluation plays in various phases of program development. Formative evaluation is primarily used for improvement during the program development; summative evaluation is used for determining the overall impact with respect to a program after it has been implemented.

In using evaluation for decision making, there must be a distinction between evaluation for one's own decision making and evaluation for others' decision making. For example, a teacher who has to make decisions on the instructional setting requires a quite different strategy from an evaluator who collects information for a decision maker who plans to allocate resources based on the data. To the former, evaluation is self-corrective with direct feedback built in; to the latter, it is facilitative to a decision maker with "indirect"
feedback, where "indirect" implies information filtered through a third party. The latter has political overtones and seems to be the type that most of the current concepts of decision-oriented evaluation are concerned with.

Stufflebeam and others (1971) have explicated the purpose of evaluation as being "to provide" relevant information to decision makers. Their conceptualization of the CIPP (acronym for the four types of evaluation: Context, Input, Process, Product) Model is based on the four types of decisions, namely planning, structuring, implementing, and recycling decisions. In relation to our discussion on purposes of evaluation, the most notable feature of the conceptualization seems to rest on the notion "to provide." The activity of "providing" information is a new role which differentiates the evaluator from existing professional roles in education. Very similar perspectives are taken by Alkin (1969), who suggests that the purpose of evaluation is to report summary data useful to decision makers in selecting among alternatives. This separation of role between an evaluator and a decision maker, who is often a program director or a product developer, must be preceded by a clear delineation of both functions and linkage points. In the Discrepancy Model, Provus (1971) has attempted to deal with the linkage aspect and has emphasized a close cooperative relationship between the two roles.

Depending on the usage of evaluation, there are emerging sub-areas of evaluation such as curriculum evaluation, evaluation of instruction, evaluation of faculty, and student evaluation. These
sub-areas tend to be named for the objects of evaluation, and do not seem to be a useful way of grouping evaluation in relation to basic purposes.

So far the main purpose of evaluation has been considered in three aspects: exposition, justification, and utility. The purpose of diagnosis is more clear than, and somewhat different from, that of evaluation. Medical diagnosis serves essentially three purposes according to Engle and Davis (1963). They are: (1) naming and classification of diseases, (2) the foundation and skeletal framework of medical science, and (3) stimulation of investigation and construction of hypotheses. The prime goal for medical diagnosis seems to center around naming and classifying disease, which directly leads to prognosis. Such a classification system is not available in education, in sociology, or in psychology although clinical and abnormal psychology have classifications which are not nearly as comprehensive as those available in medicine. We simply do not know whether educators are concerned about seeking a classification system of students based on certain relevant variables, or if it is possible, or even desirable.

The purpose of educational diagnosis tends to be directed more toward identifying corrective means for removing barriers causing a child's inadequate or atypical behavior (Smith and Neisworth, 1969). The Group for the Advancement of Psychiatry (1967) has presented the following aim of diagnosis:

A major aim of the diagnostic process is the understanding of the breakdown or lack of development of the healthy interaction as it gives rise to behavioral disabilities (p. 401).
The focal point appears to be what is "inadequate" behavior and what is "healthy" interaction. As we observe, there is a very thin line between inadequate and adequate, between healthy and not healthy in an educational sense. When we deal with students in general, the notion of diagnosis must be more than just a "corrective" term. Fox and others (1973) view the purpose of diagnosis in three aspects: (1) corrective, (2) preventive, and (3) anticipatory. Diagnosis as part of problem solving might be called corrective; diagnosis for the purpose of assessing needs and desires is preventive; anticipatory diagnosis is a way of identifying and seeking new kinds of goals and possibilities or utilizing new kinds of resources. This type of diagnosis, Fox and his associates believe, can become part of a system's process of self-renewal.

When we examine the purpose of evaluation and that of diagnosis, there are overlapping features as well as distinctive aspects as we have seen in the previous section. A major commonality lies in the use of the end result; whether it is evaluation or diagnosis, the final product will have a bearing on subsequent decisions and actions. Viewing utility as a goal seems to have certain limits since it emphasizes instrumentality; the existence of overriding goals or goals at a higher level is implicit. At this level, there is a contrast between evaluation and diagnosis. Evaluation aims toward justification of the merit or worth, while the goal of diagnosis includes an explanation of the present state of affairs with inferences of possible causes and future states.
The Question of Entity

The entity of evaluation is the "evaluatee," or that which is being evaluated. Two different questions an evaluator may have to ask regarding the entity would be: "What am I going to evaluate?" and "What should I pay attention to?" The first question has to do with identifying the entity being evaluated, categorizing areas of components which best represent the entity, and determining variables in each area. Often the complexity in the nature of the entity itself forces the evaluator to select its components (or systems) and variables to which he will pay attention. Nevertheless, the two questions are two different ways of raising the same issue.

In dealing with entity, this section is divided into three subsections: (1) a program as the entity of evaluation, (2) an individual as the entity of evaluation, and (3) the entity of diagnosis. Another area which treats methodologies as entities of evaluation is excluded here because methodologies such as techniques for selecting and prioritizing goals, data-gathering instruments, and alternative strategies of implementation, need to be evaluated without doubt, but they seem to belong more to the means for evaluation rather than the entity of evaluation.

Program as the Entity of Evaluation

One most frequently identified entity of evaluation may be called a "program." The term, program, means a complete series of activities and events leading to the attainment of some objectives or a unit of such a series which constitutes a large part of the series. Examples
of programs would be an instructional program, an in-service program, a new math program, an innovative program, or a social action program. The nature and the scope of a program are so diverse that it could mean at one extreme the activities of one day with a few people, and at the other extreme, ongoing school programs with a large number of participants. There are several schemes or matrices which have been developed to consider evaluation of educational programs. These schemes or matrices do not necessarily indicate the unit of evaluation but provide a framework for conceptualizing and describing the entity being evaluated.

Robert Hammond's (1967, p. 4) "structure for evaluation" is a fine example of a conceptual scheme for an educational program. He has proposed a three-dimensional structure as in Figure 2 in which three dimensions represent forces affecting an innovative program. The three dimensions are: the instructional, the institutional, and the behavioral dimensions. The instructional dimension includes such variables as organization, content, method, facilities, and cost. The institutional dimension is classified as student, teacher, administrator, educational specialist, family, and community. The behavioral dimension is comprised of the cognitive, affective, and psychomotor domains. According to Hammond, the importance of any combination of variables is determined by the nature of the instructional program selected for study. The cube provides a useful perspective on an instructional program; an evaluator can help program personnel and identify different forces impinging upon an innovative
FIGURE 2
HAMMOND'S STRUCTURE FOR EVALUATION
program through those three dimensions. Furthermore, a consideration of possible interactions within the cube serves as a reminder of important program factors. The three-dimensional structure is basically static and descriptive with regard to a program. How the static structure can be plugged into the process of evaluation is to be discussed in the next section.

Robert Stake (1967a) has presented an excellent scheme in his article, "The Countenance of Educational Evaluation." According to Stake, there are three kinds of information which should be distinguished: antecedent, transaction, and outcome data. An antecedent is any condition existing prior to teaching and learning; transactions are the encounters of one person with another; and outcomes are abilities, attitudes, and aspirations resulting from an educational experience. The distinction between antecedent, transaction, and outcome is mainly based on the stages of program development. Analysis of the stages of a program has been an important dimension which Hammond's cube does not include. What makes Stake's conceptualization more evaluative may be a classification of another dimension, description and judgment. Descriptive aspects are classified as intents and observations; judgmental statements are classified as standards and judgments. Stake has laid out the description and judgment matrix of an educational program as shown in Figure 3 (Stake, 1967a, p. 529). This dimension provides a basis for an evaluator to draw comparison between "what ought to be" and "what is."
FIGURE 3
A LAYOUT OF DESCRIPTION AND JUDGMENT MATRICES
OF AN EDUCATIONAL PROGRAM BY STAKE
The program definition by Provus (1969) is another way of describing a program for evaluation. At the Stage 1 of his Discrepancy Model, a detailed description of an education program or program definition is made as it is perceived by the staff of that program. The definition is divided into three essential components: (1) the objectives of the program (expected outcomes); (2) the students, staff, media, and facilities that must be present before the objectives of a program can be realized (antecedents); and (3) the student and staff activities that form the process whereby the objectives are achieved (process). Once the definition is obtained, it is used as a standard against which the program is evaluated. Provus (1971) also identifies five definitions of program evaluation:

1. the judgment of authorities about a program;
2. the opinions of program staff;
3. the opinions of those affected by a program;
4. a comparison of actual program outcomes with expected outcomes; and
5. a comparison of an executed program with its design (p. 10).

The conceptualization of three main components of a program and bases for comparison in the Discrepancy Model are very similar to what Stake presents. However, Provus is more explicit than either Stake or Hammond in explaining the way a program definition is used and modified in the evaluation process. To Provus, the program
definition is the standard for comparison. All three, Hammond, Stake, and Provus, place a heavy emphasis on the objectives of a program that often include not only behavioral objectives for student outcomes, but also objectives for staff and other participants.

So far we have dealt with representative work in the field which considers programs as main objects of evaluation and describes program components in different ways. In decision-oriented evaluation strategies such as the CIPP Model and Alkin's Model, the entity is not clearly identified since the concern is with the decision setting and the type of decision to be made rather than any descriptive framework of a program. Depending on the phases of a program, different decisions will be made; and depending on the decisions to be served by evaluators, different kinds of data will be collected. This aspect may become advantageous to the evaluator when the decision maker has an articulated grasp of a program. On the contrary, the evaluator would be in a disadvantageous position if he has to work on a component of the program which is interdependent on other program components and if the decision is to be made only with regard to the particular component.

Individuals as the Entity of Evaluation

Another focus of evaluation may be an individual's growth, where the individual person is the entity. For the sake of convenience and emphasis on students in schooling, student growth will be chosen in this section as the main focus of evaluation. Very often student growth, specifically in student achievement, is an important part of program evaluation. The rationale for treating this as a separate
entity of evaluation is that an individual student can be and should be the prime focus of evaluation rather than used as a source of data collection in justifying an educational program. The notion, evaluation of student behavior, has grown along with the scientific movement in education and the psychological testing boom in the 1930's. Since that time, the content for evaluation of student behavior has diversified in at least three different dimensions (Merwin, 1969). One is breadth—going beyond the evaluation of cognitive outcomes to include affective outcomes, environmental inputs into the educational situation, and their social impact on the learner. The publication of Taxonomy of Educational Objectives: Handbook II: Affective Domain (Krathwohl, et al., 1964) is a landmark in this area. Environmental factors affecting learning, including teacher behavior, student perception, and community characteristics, have been recognized by work of Rankin (1935), Wolf (1965), McDill, et al., (1969), and many others. Another factor is the concept of evaluating status as opposed to change. Techniques employed in evaluation often include a measure of status at two points in time as a basis for determining change or "growth," although there still is a debate on methodological problems of gain scores (Harris, 1963). A third aspect is that the concept of evaluation is applied to a group of individuals rather than an individual. The whole notion of individual differences has focused evaluation on the individual. The trend of nationwide educational programs, and more recently a mandatory requirement for accountability demand evidence of quality and achievement in a large group of students.
Related, but somewhat apart from these considerations, is the designation of target groups, such as preschool children, the disadvantaged, the inner-city children, and so on. Since the priority is given to some targeted, relatively homogeneous group, the evaluation of students subsequently has been focused on a group basis.

Summarizing the view of an individual as the entity of evaluation, the focus is on change or growth of a group of individuals whose performance areas are broadened to include affective and psychomotor domains in addition to cognitive ability and to include the interactive aspect of an individual with environments.

The Entity of Diagnosis

The entity of diagnosis has been mainly an individual whose state of "health" is the phenomenon to be concerned with. Classifying devices have been developed, such as a classification system of diseases in medicine, classification of abnormalities in abnormal psychology, and classification of learning disability in special education.

More important than classification systems themselves is the way an individual is basically viewed, which can be characterized along three dimensions: (1) the individuality of a person as contrasted with the individualization process, (2) the experiential domain as well as the behavioral domain, (3) the person as a dynamic totality. The fact that no two people are identical cannot be disputed. An emphasis on individuality requires both a humane look at a person and varied personalized attention. Shane (1967) contends that the rehumanization
of education is required with "greater stress on individuality rather than individualization" (p. 69). According to the existential-transactional approach, an individual has to be understood by his inner life of consciousness (experience) and an outer life of behavior (Leary, 1970). Traditionally, the emphasis of behavioral scientists has been on behavioral manifestation and signs. It seems to be equally significant to understand one's perceptual and experiential levels in diagnosis. The notion of a person as a dynamic totality can be traced back to Lewin's field theory and can also be found in recent concepts of systems analysis. An individual's growth potential needs to be understood as the dynamic interaction of two areas: one is an individual's total being which includes his basic physical and intellectual endowment, the inner biological and psychological forces, and behavior patterns or ego mechanisms which emerge in the development of his own individual identity; the other is the environment and its social forces which influence the individual as he matures.

It can be summarized that the focus of attention in diagnosis is on an individual's state of physical, psychological, intellectual, and social being in relation to the environmental forces impinging upon his growth and health.

The Question of Means

Evaluation is basically a field of "means" or methods through which the growth of an individual is assessed, the appropriateness of social progress is judged, and the effectiveness of organizations is
determined. A means can be conceived of, first of all, as a general approach toward evaluating and diagnosing, which may be called a process or design. Secondly, a means also includes more specific techniques, tools, and instruments to be used at different stages of the general process. A "means" can rarely be applied to a situation without having the two ingredients together. We realize often that evaluation models or diagnostic models depict the two ingredients as fundamental features of a model with a varying degree of emphasis on one over the other.

Our quest for means is discussed under the three headings: (1) the process of evaluation, (2) the process of diagnosis, and (3) the measurement techniques of evaluation and diagnosis.

The Process of Evaluation

The general process followed in evaluation involves several major steps. Tyler (1942) enumerates the following steps:

(1) Formulate a statement of educational objectives, then these statements of objectives are classified into major types.
(2) Define each of these types of objectives in terms of behavior.
(3) Identify situations in which students can be expected to display these types of behavior.
(4) Select and/or develop methods for obtaining evidence regarding each type of objective.
(5) Obtain evidence regarding each objective from students.
(6) Devise means for interpreting and using the results of the various instruments of evaluation.
Tyler asserts that the procedure is more than simply following the steps, but involves a continuing cycle for improvement and refinement with deeper understanding of students. Metfessel and Michael's (1967) paradigm also includes an evaluation process, which is very similar to that of Tyler, but with the major differences of the inclusion of various participants, such as lay individuals, professionals, and students as facilitators in the evaluation process. A direct involvement of the participants, lay individuals, professionals, and students, is proposed at the second step when broad goals are set. This strategy may appeal to people in local communities but a careful procedure has to be developed in determining the weights for judgments of different groups of people and in processing different inputs in an organized fashion. A pool of measures listed in the Appendix of their article appears to be of help to those who need to identify the type of instruments for collecting data.

Hammond's model (1967) starts with a definition of a program; the definition of a program includes specifications of the content area, grade level, and so on. The second step is that of defining the descriptive variables in the instructional and institutional dimensions of his structure, which has been described in the previous section. The task of stating objectives in behavioral terms is the next step, and the fourth step is that of assessing the behavior described in the objectives. The final step is the analysis of the results within factors and the relationships between factors, to arrive at conclusions. The process of evaluation formulated by Hammond is not basically
different from that of Tyler, and Metfessel and Michael, although structural elements of evaluation such as instructional and institutional dimensions are broadly conceived by Hammond. Basically, the strategy of evaluation suggested by these approaches is that of comparing student performance with behaviorally-stated objectives.

Different kinds of comparative bases are found in Provus' Discrepancy Model and Stake's work. According to Provus (1969), "there can be no evaluation without discrepancy information. There can be no discrepancy without a standard; therefore, the first task of any evaluation is to obtain program standards" (p. 264). Fundamental to his evaluation process are the four development stages: (1) definition, (2) installation, (3) process, and (4) product. Program standards, which vary depending on the stages, include: (1) the program-content taxonomy at Stage I, (2) the program definition at Stage II, (3) the relationship between program processes and enabling objectives at Stage III, and (4) terminal objectives at Stage IV. A cost-benefit analysis is recommended at Stage V to determine program efficiency. A flow chart of the evaluation process is shown in Figure 4 (Provus, 1969, p. 247) on the following page.

The use of discrepancy information always leads to a decision to (1) go on to the next stage, (2) recycle the stage, (3) recycle to the first stage, or (4) terminate the project. Thus, the information can feed back to different stages in the process. In each of the five stages of evaluation, problem-solving activity is elaborated as a sequence of questions. As a strategy, Provus emphasizes a symbiotic
Terminates

Terminates

Terminates

FIGURE 4

A FLOW CHART DESIGNED TO FACILITATE COMPARISONS OF PROGRAM PERFORMANCES WITH STANDARDS BY PROVUS

Note: S = standard, P = program performance, C = compare, D = discrepancy information, and A = change in program performance or standards. 1 through 5 represents five stages.
relationship between the evaluation staff and program staff, and between assessment activity and improving activity. The strengths of his evaluation process include: (1) a systematic approach toward a clear definition of the educational program being implemented, and (2) practical guides for practitioners. On the other hand, it is likely that an evaluator might neglect the "status" due to the emphasis on discrepancy and to ignore possible unexpected side effects, since the design specifications are the main criteria on which the movement of a program is checked and advanced to the next stage.

The evaluation process conceived by Stake is based on comparisons between different sets of data within the description and judgment matrices. The notions of congruence and contingency are employed in description. Stake has presented a process of judging the characteristics of a program, in which two basic comparisons are made: (1) an absolute comparison, and (2) a relative comparison. Figure 5 depicts the process (Stake, 1967a, p. 537). By absolute comparison, the evaluator makes a judgment whether or not each standard is met. To Stake, selecting the standards of a reference group or viewpoints is itself a judging act. Relative comparison is accomplished by comparing one set of descriptive data with another set of data from an alternative program. A final act of judgment can be obtained from relative judgment of a program, as well as from absolute judgment. The position taken by Stake must be understood in light of formalizing informal and subjective aspects of evaluation. He does not provide any steps to be followed by an evaluator. As he emphasizes, it is important to
FIGURE 5

A REPRESENTATION OF THE PROCESS OF JUDGING THE MERIT
OF AN EDUCATIONAL PROGRAM BY STAKE
know what kinds of standards are applied when a judgment is passed and to know how judgments are processed.

The most important contributions to a decision-oriented viewpoint of evaluation have been presented by Stufflebeam (1969), and Guba and Stufflebeam (1968), Alkin (1969), and Stufflebeam, et al. (1971). Among them, the CIPP Evaluation Model by Stufflebeam, et al., deals with the process of evaluation, with the underlying theme being the process of delineating, obtaining, and providing information. The basic relationship between evaluation and decision making, and the three functions are graphically represented in Figure 6 (Stufflebeam, et al., 1971, p. 216). Six steps have been developed and referred to as a logical structure of evaluation design; the structure can be employed in the same way for all four types of evaluation: context, input, process, and product evaluation (Stufflebeam, 1969). These steps are as follows:

1. Focusing the evaluation
2. Collection of information
3. Organization of information
4. Analysis of information
5. Reporting of information
6. Administration of the evaluation

These six elements have been reorganized in the later version (Stufflebeam, et al., 1971) under the delineating, obtaining, and providing functions, and further elaborated. The flow chart of the CIPP Model is very comprehensive in depicting different types of evaluation in
FIGURE 6
THE RELATION OF EVALUATION TO DECISION MAKING
SEEN BY STUFFLEBEAM, et al.
a broad perspective of the change process, a compatible relationship with decision types, and continuous feedback information flow to various decision situations. It seems that the model itself includes more than just the process of evaluation, and perhaps a naive practitioner may be troubled as he tries to apply the model without proper understanding and training.

The discussion so far has been focused on the general process of evaluation which is viewed from three major perspectives on evaluation: (1) the process of comparing student performance against instructional objectives; (2) the process of comparing one set of data with another set of data, oftentimes a program description with standards; and (3) evaluation processes employed to serve decision-making processes. Now we will focus on the process of diagnosis.

The Process of Diagnosis

In medical diagnosis, the process is generally conceived of as including the following steps according to Ledley and Lusted (1959):

(1) The physician obtains the case facts from the patient's history, physical examination, and laboratory tests.

(2) The physician evaluates the relative importance of the different signs and symptoms (assigns weighting factors to signs and symptoms).

(3) He arrives at a differential diagnosis.

(4) He makes a definite diagnosis, if possible, or decides that more information is needed to make a diagnosis.
Jacquez presents a flow diagram of the diagnostic process shown in Figure 7 (1964, p. 34). According to Jacquez, tentative hypotheses can be formulated when a physician analyzes the data, and it is at the level of the formulation of a tentative diagnosis that the physician brings to bear his knowledge, experience, and intuitive insight. Common aspects in the process of medical diagnosis appear to be (1) the consideration of all possible sets of hypotheses, and (2) the collection of evidence to eliminate irrelevant hypotheses until the physician reaches a final diagnosis which will directly lead to treatment.

Psychologists in the clinic or in the school used to assume the role of a test administrator, but a recent trend seems to be toward the role of an assessor or a diagnostician (Gardon, 1971). Grieger and Abidin (1972) have developed a "psychosocial model" for the assessment of children's behavior to promote the role of a school psychologist along the same line. The specific set of techniques and the logical process proposed by Grieger and Abidin seem to be very meaningful for educational diagnosis. Within the psychosocial assessment model two principal techniques are employed—interview and observation. The general process can be summarized as below:

1. Preliminary assessment; through the referral statement and consideration of the suggested affective state of the referral source.

2. Interview with the teacher
   (a) Definition of the problem behavior
   (b) Identification of the consequent contingencies
   (c) Detection of irrational ideas on the part of the teacher
Collect Data

Consistency Check on Data

Analysis of Data

Formulation: Tentative Diagnoses

Evaluation: Formulation in Terms of Patient Care

Therapy

FIGURE 7
FLOW CHART DIAGRAM OF DIAGNOSTIC PROCESS BY JACQUEZ
(3) Observations of the whole social situation
   (a) Check the validity of the teacher's perception
   (b) Establish baseline data to monitor change
   (c) Identify both instigating conditions and consequent conditions

(4) Provide feedback to the teacher

The psychosocial assessment model suggests a means by which one can deal with a problem within a personal and social environment and can uncover the perceptual barriers that may perpetuate and reinforce the problem behavior.

Those diagnostic processes that have been reviewed so far are based on a presumption that the client system brings its state of affairs or a problem to the attention of the diagnostician, and the initiation on the part of the client sets the initial stage. This seems to be a great advantage for clinicians, and it does not usually happen to the teacher in the same way. Therefore, the process of diagnosing the individual student's growth in education may take a different form. An example of such a process may be found in the conceptualization of Duncan and others (1973). They describe the diagnostic process as part of the evaluation-diagnostic model; the model attempts to make subjective and intuitive elements useful since those elements frequently occur as hidden evaluations in school. The diagnostic process includes: (1) recognizing and classifying data, (2) discovering discrepancies, and (3) reporting them as precursors of diagnosis. Thus, the intention to diagnose can be determined in
Part A of the diagnostic process in Figure 8 (Duncan, et al., 1973, p. 201). The activity assumed at Part A includes mainly clarifying the antecedents and organizing information bits together; Part B deals with variances and relationships. These two steps will promote lower-risk probabilistic decision making in diagnosing learning strengths and weaknesses. The consultation with the information reported should make diagnosis and prescription "possible," but Duncan and his co-authors think the present level of knowing allows it only a "probable" side.

Their approach seems to suggest that there are two types of hypothesizing, if arriving at a prescription from the obtained information can be viewed as hypothesizing: one is with a "probability" and the other is with a "possibility." The hypothesizing with a "possibility" is the type which they think presently can occur more often in diagnostic efforts in education.

In summary, the diagnostic process can be characterized by at least three aspects. One would be a common element in any inquiry process, that represents an effort to arrive at a conclusion or a synopsis through the formulation and testing of hypotheses. The second feature of the process is that the consistency check or validity check is essential—not only in testing hypotheses but also in formulating hypotheses. Finally, the emphasis of the diagnostic process is on contingencies rather than congruence, although congruence information is used for checking consistency among data from different sources.
2.0 Descriptive Information from Similar Individuals in Similar Situations (Past)

1.0 Descriptive Information from Individual Students, Gathered and Organized (Present)

3.0 Information Reported

4.0 Reported Information Analyzed and Expectations Determined

5.0 Make Diagnosis

6.0 Compare Diagnosis with Performance Indicators

7.0 Make Prescription

FIGURE 8

DIAGNOSTIC PROCESSES (C) BY DUNCAN, et al.
Measurement Techniques for Evaluation and Diagnosis

The process of evaluation and diagnosis provides only a general approach, a logical process to plan and carry on evaluation and diagnostic activities. Tools for gathering data are also important in the process since only a sample of behavior or events can be collected to describe the behavior or events.

The author attempts to deal with three aspects of the issue of measurement: (1) general difficulties encountered by evaluators with regard to measurement, (2) identification of the most useful sources of techniques, and (3) considerations in choosing appropriate techniques. It has to be noted that we have in mind the educational setting in general; diagnostic techniques used for specific purposes or used in a laboratory setting are excluded.

The difficulty in obtaining appropriate tools for evaluation stems from at least the following circumstances. First of all, the increased comprehensiveness of evaluation concepts and the subsequent broadening view of the evaluation process often demand measurement tools different from many existing techniques. Second, the utility of an instrument to a particular situation is limited to that situation since evaluation information is often context-bound. Accordingly, a large number of instruments are developed, but very few of them can be used more than once. Third, a new classification of variables is required to include many variables not traditionally considered in evaluation methodology. Such a classification should permit the location of various kinds of
available instruments. Finally, the methodological inadequacy involved in borrowing measurement techniques devised in psychology, sociology, and other areas, for use on educational problems causes difficulty and confusion in the field of educational evaluation. Very often, we observe various forms of "reductionism," as social patterns are measured by psychological variables, a dynamic interaction is measured by static variables, and so on. It seems to be essential that we must be much more clear about the entity we evaluate and be aware of underlying assumptions in using measuring techniques.

One way of differentiating measurement techniques would be to draw a distinction between formal and informal techniques. The term formal technique refers to methods using objective measures and explicitly stated standards. A key word for formal techniques would be "objectivity," which means that a sample of behaviors is selected and observed in a systematic way so that scores can be obtained and compared. Formal techniques would include all standardized instruments, some observational techniques, and laboratory procedures if there is a standard way of administering, scoring, and interpreting responses. It is also important that the instruments demonstrate acceptable levels of reliability. Well-known sources of information about standardized instruments include: Buros' Mental Measurements Yearbooks (1938, 1972), Tests in Print (Buros, 1961), Educational and Psychological Measurements, Measurements Used in Education, Journal of Educational Measurements, and catalogs of test publishers.
For readers who are interested in measures for the affective domain, they may find it helpful to refer to Beatty's *Improving Educational Assessment and An Inventory of Measures of Affective Behavior* (1969). *Measuring Human Behavior* (Lake, et al., 1973) is another source book for measures of social functioning, which the authors define as (1) the properties of the individual as he takes part in social interaction, and (2) the properties of the immediate social system involved. Not all of the measures included in the above publications are standardized instruments.

The standardized instruments today are much more sophisticated and technically advanced, but the users of those instruments should be cautious in selecting one which is not only reliable but also valid to their particular purpose and situation. Indiscriminate use of such instruments is dangerous in evaluation and diagnosis. Recent writings of Glaser (1963), Stake (1971), and Worthen and Sanders (1973) have pointed out limitations of standardized instruments especially for program evaluation. Moreover, most standardized instruments exclusively measure cognitive aspects, and measures for the affective and psychomotor domain are desperately needed.

Informal techniques are defined here as other measuring techniques being developed and used without making the developing procedures necessarily systematic or explicit. They include: spontaneous observation of the student's study habits, attitudes, and reactions; analysis of oral or written work of the student; interviews; analysis of expressive behaviors such as role playing and artistic productions;
anecdotal records; sociometric measures; and the critical incidents techniques. Although there is always a possibility of distortion in the process of data collection through informal techniques, they could be useful to evaluators and specially classroom teachers since the relevancy of data, a direct interaction with the data source, and immediate interpretation of data can be controlled by the person who uses such techniques. The potential utility of informal techniques has been supported by many authors in the field. To name a few, Smith (1969) contends that teachers can employ informal assessment techniques in an unburdensome, skillful way, and presents an excellent way to guide the teacher in the application of day-to-day diagnosis of student progress. Informal reading inventories have been developed by Lucas (1973) and Johnson and Kress (1965). Symonds (1931) considers that observation as an informal technique is of prime importance. He explains essentials of observation as follows:

(1) the possession of efficient sense organs;
(2) alertness;
(3) the ability to make reasonably accurate estimates without the use of special instruments;
(4) the capacity to make fine distinctions;
(5) freedom from various pathological states;
(6) making an immediate and accurate record;
(7) the ability to perceive accurately, for when the stage of observation which is called perception is reached, the opportunity for error increases tremendously;
(8) freedom from prejudice or from habits of interpretation; and

(9) freedom from excitement.

Worthen and Sanders (1973) provide a list of informal techniques and discuss strengths and weaknesses of each. The article by Metfessel and Michael (1967) suggests various kinds of measures, standardized as well as non-standardized, cognitive as well as non-cognitive measures. Increasing attention is paid to unobtrusive or non-interventional measures (Webb, et al., 1966), not as a substitute for obtrusive measures but to complement them. Examples of such unobtrusive measures include: attendance rate, number of library books charged out for a certain period, archival and private records, seating patterns, number of disciplinary incidences, etc.

Another way of categorizing current measurement techniques would be that according to an input-process-outcome evaluation plan. Regardless of the adequacy of such an evaluation plan, it seems to provide a general framework for categorizing measures. Measures for input, process, and outcome will be briefly discussed.

Measures for input are concerned with antecedent conditions existing prior to program implementation. The conditions include characteristics of students, staff, the community, and the organizational settings. Oftentimes, such data are available in existing files such as school records, city and county offices, school board bulletins, etc. However, a systematic collection of input data may be necessary through an interview or mailed questionnaire. There are
several sources that provide useful guidelines for constructing interview schedules and conducting surveys: Cannell and Kahn (1968), Maccoby and Maccoby (1954), etc. Whatever the contextual data collected, they have to be organized in such a way that the student's entry behavior and readiness can be understood in a social, intellectual, and psychological environment and can lead to a meaningful interpretation of the relationships involved, even though such an interpretation might be tentative. Data for student entry behavior and readiness can be collected by standardized instruments, diagnostic tests, and informal techniques.

Measurement of processes or transactions calls for another category of important data. To evaluate the worth of a program or its effectiveness properly, one must have a description of what has happened during the program. Description and analysis of activities in the classroom comprise the essential part of the transactions. There are many methods for observing and recording interactions in a classroom setting. The best source for finding various classroom observational methods would be the periodical reports by Simon and Boyer and published by Research for Better Schools. Excellent reviews and critiques of the various methods have been done by Medley and Mitzel (1963), Rosenshine (1970), and Rosenshine and Furst (1973). An article by Rosenshine and Furst (1973) in the Second Handbook of Research on Teaching indicates that there are at least one hundred and twenty instruments available.
Although there is a potential utility, one can observe that most of the classroom observational systems or techniques have not been used in evaluation studies as often as they could have been. A persistent problem is that of eliminating the distortion due to the observation process itself or due to the observer biases (Sjogren, 1970). Another problem arises when the analysis and description of discrete pictures of a classroom do not reveal any relationship between what the teacher has intended and what the learner has learned. Needed are the transaction data which can indicate a best possible fit between teaching style and learner characteristics, between curricular materials and a teaching style, and between any other significant variables. Furthermore, such observational techniques perhaps should be extended in the future to suggest a possible modification of the teaching process.

Outcome measures represent the third category. The objectives of educational programs are generally concerned with a change in behavior such as changes in attitude, perception, or skill level, or an increase in knowledge. The measurement of change or gain score has been challenged by Stake (1971) and Glass (1968). A pre- and post-comparison of outcome variables may be supplemented by a technique similar to time-series analysis (Glass, et al., 1972) so that gain or no-gain, persisting over a period of time, can be noted as a pattern or trend. If a test score can be divided into scores on sub-scales, scores on each sub-area are sometimes useful in indicating the student's differential acquisition.
Another development that has implications for evaluation is mastery testing or "criterion-referenced" testing as it is referred to by Glaser (1963). Since criterion-referenced tests are used to determine an individual's status on a performance standard rather than on a norm group, they are relevant to educational evaluation and diagnosis (Popham and Husek, 1969; Hambleton and Novick, 1972). Ways of estimating appropriate reliability of criterion-referenced tests, and better means for selecting items are in progress and yet further development needs to be noted.

In summary, the question as to "how to obtain valid and reliable measures" in evaluation and diagnosis is not a simple one. The main effort of test developers has been on the technical sophistication with dominantly cognitive, norm-referenced measures and oftentimes, without a clear understanding of the constructs being measured. Accordingly, test users and evaluators tend to develop some other informal methods to meet their own needs and purposes in addition to the instruments available from test developers. It seems to be important for the measurement specialists not only to develop tools that are matched to the needs of the evaluator and diagnostician, but also to provide insightful guidelines and principles of some basic informal techniques for use.

The Question of a Specialist Role

and Utilization of Information

A satisfactory evaluation and diagnosis usually require educational specialists who are qualified to do the task and to make information
available for use. The question of role must take into account, first,
ways of training personnel for a role by analyzing tasks and capabili-
ties, and secondly, a functional relationship with the existing roles
in the educational arena. It is possible that the functions and tasks
might be overlapped with that of many existing roles if the institu-
tional arrangements are not ready to take a newly created role and a
subsequent reordering. The field of evaluation is considered as an
emerging area. We may begin our discussion with the tasks and roles
of the evaluator, move to the role of diagnostician, and discuss the
utilization of evaluative and diagnostic information.

Thomas Owens (1968) has developed a taxonomy of evaluator tasks,
which is primarily based on the CIPP Evaluation Model, and includes
the following eleven programmatic functions:

1. Developing a climate among educators that is supportive
   of evaluation.
2. Planning and focusing the evaluation.
3. Selecting or constructing appropriate instruments.
4. Collecting data.
5. Processing data.
6. Analyzing and interpreting information.
7. Reporting information.
8. Assisting decision makers in utilizing evaluation
   information.
9. Providing support services not directly related to
   a performed evaluation.
10. Performing research related to evaluation.

11. Administering the activities of an evaluation unit.

More specific tasks are delineated under each function and these tasks are considered the collective responsibility of an evaluation unit. The taxonomy appears to be idealistic in the sense that it has been derived from a theoretical position and it includes most of the possible tasks which might be assumed by an evaluation specialist. It should be noted, however, that some of the tasks have been done by the personnel in local or state educational agencies other than the evaluator. It seems necessary to isolate tasks specific to evaluation in relation to other inquiry-related tasks.

The American Educational Research Association Task Force on the Training of Research and Research-Related Personnel in Education, chaired by Blaine Worthen, has attempted an empirical study of selected factors related to the training of researchers, developers, diffusers, and evaluators in education. According to the results of a factor analysis (Worthen, et al., 1971), the tasks which represent grossly evaluation functions consist of such competencies as planning evaluations, specifying objectives, constructing attitude scales, putting numerical information in written form, and knowledge of evaluation and measurement. There are also tasks such as management and planning, and evaluating proposals. Even though the essential tasks of the evaluator are closely related to collecting information, evaluation tasks are very diverse with regard to providing information to
the client. The format of reporting and the relationship with a client system determine the extent to which the information is utilized.

There is no agreement among specialists in the field of evaluation as to whether the evaluator should or should not make judgments. Scriven (1967) explicitly, and Stake (1967a) implicitly, suggest that the evaluator is the one who actually should make a judgment. Others such as Cuba and Stufflebeam (1968), and Provus (1971) argue that the evaluator's job is done when he reports the most relevant information to the administrator. A middle ground is taken by Worthen and Sanders (1973) by pointing out that the making of final decisions about a program be a two-man team effort. A collaborative relationship between the evaluator and decision maker seems to be a valuable notion as long as the total social climate is healthy and the efficiency of decision making is taken into consideration.

Among a number of roles the evaluator can play, a distinction between formative and summative evaluation roles by Scriven (1967) might be employed. Since the formative evaluator plays a role which is nonthreatening and supportive to the program development, his position might be internal to the client system, while a summative evaluator might better make summative judgments if he is external to the client system. The relative position of an evaluator in relation to a client system is sometimes not very clear-cut, but the knowledge of the relationship can limit the role he can serve. If an evaluator has to do a formative evaluation, staying external to a client system
(for example, as a consultant), then some strategic means have to be
designed in order to get information and feedback information to
the system periodically.

The role of evaluator has been proposed as a group of opera­
tional, task-oriented specialists which often form an evaluation
unit. The seven specialist roles suggested by Owen (1968) are:
(1) evaluation director, (2) evaluation coordinator, (3) surveillance
specialist, and the following support specialists: (4) instrument
specialists, (5) data collection specialist, (6) data processing
specialist, and (7) reporting specialist. Similarly, Guba and Stuffle­
beam (1970) have proposed six sub-units or roles of an evaluation
unit: the context section, the input section, the process-product
section, the services section, the information section, and the reports
section. These proposals are ambitious and theoretical in their
attempt, and it is questionable whether or not it is possible to imple­
ment them in most educational systems at the present time. If we
accept that the evaluation specialist is a newly emerging role in
education, he then has to be equipped with proper strategies of entry
to the educational system, and his role might be viewed similar to a
change agent. A new mode of operation in a system, for example, rational
decision making, is required if evaluative information is going to be
useful at all. Training of competent evaluators is important. More
important is the realization of the challenge which an evaluator has
to face in bringing a new perspective into a system and in creating a
need for evaluative information from various levels of the system.
Stake and Denny (1969), have expressed their keen observation well in the following statements:

...regardless of the depth and breadth of the training program and the academic qualifications of the candidates, consideration should be given to their tolerance for ambiguity and to their ability to persevere in working on unpleasant tasks (p. 375).

Exposure to the training packages such as RUPS (Research Utilizing Problem Solving) developed by Northwest Regional Educational Laboratory, or writings of Schmuck and Miles (1971), Havelock (1973), and Bennis (1969), might be regarded as a partial response to the above issue.

The role of a diagnostician has been conceived of quite differently from that of an evaluator. Diagnosis is a function of physicians, a function of school psychologists, a function of reading specialists, and a function of classroom teachers. Diagnostic skills and capabilities are considered as crucial to these persons in order that they may perform their roles successfully, rather than being embodied in a separate role of diagnostician.

An example can be drawn from role differentiation of reading specialists developed by the International Reading Association (Schell and Burns, 1972). According to them, reading personnel can be divided into two categories: those who work directly with children either as reading teachers or reading clinicians; and those who work directly with teachers as consultants or supervisors with prime responsibility for staff and program. The role of a reading clinician emphasizes diagnostic functions more than any other functions. We might say
that specialists in the first category are situated internal to the client system and have a direct contact with children, while those in the second category are located external to the system and have to work through classroom teachers. The distinction seems to be a useful one since the functional relationship of the reading specialist to the existing roles and systems is well delineated.

When we consider education in general, we might say that the classroom teacher can assume the role of diagnostician. Tyler (1935) argues that it is highly desirable that diagnoses be generally made by classroom teachers. He further states that the educational diagnostician, be he specialist or teacher, must (1) understand the educational program in connection with which the diagnosis is being made, (2) have knowledge of children, (3) have the scientific attitude, and (4) be able to use a variety of technical abilities. Smith and Neisworth (1969) discuss advantages and disadvantages of teacher diagnosis. They contend that the teacher is in the best position to assess educational problems of children since he is the one who executes the program and has a constant contact with typical behavior patterns of children, although there are disadvantages due to the lack of time and lack of training in the use of formal techniques. The position they have taken is a desirable one if the focus of our attention in the school is at the student level and the data from diagnoses can be utilized in the most effective way. The aspect of utilization of evaluative and diagnostic information will be dealt with hereafter.

There is no doubt that data generated from evaluation and diagnosis should be able to direct, guide, or prescribe the subsequent
action in the educational process. However, we have not been very successful in generating such data nor in knowing the right fit or linkage between data and the source of data needs. Stake and Denny (1969) have bluntly pointed out that current diagnostic tools generally do not prescribe which treatments are most appropriate among those available to us. Technical adequacy of measuring tools and analyzing educational processes is one reason why the data are not so useful as they could be. To the author, there seems to be at least three more factors that contribute to information utilization if the client system is more or less at the micro level. The first factor is the relationship between the evaluator or diagnostician and the client system, which has to be characterized as collaborative, participative, and understanding. There should be more explanations and delineations of the collaborative relationship with regard to major decision points, responsibilities, and interpersonal transactions. The nature of collaboration has been dealt with by Provus (1969) and Worthen and Sanders (1973) to some degree. Another factor to be considered would be the time element. The timeliness of the information can be sometimes a crucial determinant in the use of evaluative information. This factor has been emphasized by Stufflebeam and his co-authors (1971). Lastly, the clarification of the intent on both parties needs to be handled adequately. The intended use of evaluation information is oftentimes implicit; an explicit specification and sharing of intents is also important.
It can be summarized that the role of evaluator has recently been emerging as a separate role in the educational arena and has been viewed as facilitative for program administrators, while a diagnostic role has been assumed more often by various professionals as part of their specialized function and thought of as facilitative for particular individual clients.

Utilization of information in its simplest sense can be conceived of as communication between the information-owner and the client. The more close, direct, and trust-based the relationship is, the better the information can be used and internalizable within one's cognitive structure. When the client system is more complex, which is oftentimes the case in the evaluation field, considerations have to be made with regard to the proper linkage, not only between the specialist and the client, but also among different levels within the client system.

Summary of the Chapter

The review indicates that there are some generic features in the evaluation concept. Evaluation is a process of inquiry in the justification of the worth or merit of something. At the same time evaluation refers to the product, a summary judgment, which has been reached as an end result of the inquiry process. It is necessary that evaluation producers be aware of both the process and product elements in conducting any evaluative activities. To the consumers of evaluation information, evaluation is viewed as an obligation on the part of
educators, who are responsible for discovering whether students are in fact learning what they are supposed to learn through the learning experiences educators have designed. These two points of view on evaluation—consumers' and producers' views—seem to be the key notion to an evaluation act.

Among the various roles evaluation can play, formative and summative evaluation represent two major roles of evaluation as it is applied to educational programs. A recognizable number of specialists in the area emphasize "evaluation for decision making," which seems to be a significant shift from the traditional usage of evaluation—assessment of learning.

The identification of the object being evaluated is another issue. Generally, two different levels are recognized: the level of individual learners and that of the educational program/system. Evaluation concepts presently available are appropriate primarily to the program/system level although the unit of analysis during the evaluation process is oftentimes the learner. Consequently, the information collected does not directly assist the learner nor provide data which can indicate the effectiveness of the program itself (e.g., personnel coordination, program facilities, communication among sub-units, etc.).

The means of evaluation have been identified in terms of a general process and data-gathering tools. The process of evaluation is often characterized as a process of comparison between "what is" and "what ought to be." The variations in evaluation process stem largely from various approaches of conceptualizing "what ought to be," that might
be instructional objectives, intents, definitions of a program, or decision makers' standards. New measurement tools and analysis techniques have been developed especially in the area of criterion-referenced measures, mastery testing, and item sampling, yet there still is a great need for devising tools for gathering data that are appropriate to and required for the current evaluation concepts and models (e.g., techniques for process evaluation, needs assessment tools).

The evaluation specialist, or evaluator, is a newly emerging role in education and is considered mainly as facilitative for program directors or administrators. There is a difficulty in terms of the use of evaluative information in this kind of arrangement. First of all, the evaluator is situated between the decision maker and the source of data (ultimate clients). He provides data to the decision maker; and the decision maker must execute actions based on the data provided by the evaluator. Accordingly, the utility of the information would be at least a function of the relationship between the evaluator and the decision maker, and a function of the credibility which the evaluator has built with the data source, oftentimes classroom teachers and the learners.

The attempt to incorporate some aspects of the concept diagnosis into the mainstream of evaluation seems to be a fruitful one. An implication which prevails under the concept of diagnosis is an intent to eliminate problems and impairments that an individual faces, through (1) examining the present state of affairs, (2) differentiating
strengths from weaknesses, and (3) establishing contingencies between the present state and antecedent conditions. If the concept of diagnosis is to be used in educational settings, its intent, namely the elimination of problems, must be broadened to include the aspect of overall individual development in addition to the remediation of deficiencies. The methodology used in diagnosis, which the author has noted previously as the discovery or explanation, has a great potential in educational evaluation if evaluation is to have a developmental impact upon actions.

The object of attention in diagnosis is always the individual. The fact that the individual is the most crucial unit of analysis can enlighten also our perspective on evaluation. This does not mean that we must pass judgment on the individual, but means that we focus our attention on the individual learner in order to find out where the individual is in his developmental process, and to discover dynamic forces impinging upon him in order to make a decision about relevant and effective teaching strategies for the learner. What we need is not only a diagnostician but also a diagnostic teacher who can engage with students in their daily life so that information obtained through the teacher can be used directly and diagnostically.

An effort to fuse the notion of diagnosis with that of evaluation will provide a basis for the development of diagnostic evaluation in the following chapter.
CHAPTER III

A CONCEPTUALIZATION FOR THE DEVELOPMENT
OF DIAGNOSTIC EVALUATION

This chapter consists of four sections. The first section presents a perspective posed in order to set our minds to the central purpose of diagnostic evaluation—facilitation of learning and teaching. The second section opens up an avenue for conceptualizing diagnostic evaluation with five facets characterized. These facets are in part based on the humanistic perspective and in part derived from the fusion between diagnosis and evaluation. The third section is an attempt to extend the basic ideas to developing three types of diagnostic evaluation: sequential, differential, and dynamic. Strategies for implementing diagnostic evaluation are included in the final section.

Perspectives

We are all so used to thinking of evaluation in relation to the systematic collection of data, providing information for decision making, measuring with paper-and-pencil tests, and judging the effectiveness of competing instructional programs, that it is hard to shake off this mind set. Nevertheless, in the beginning we must shake it off for a while in order to focus our fundamental purpose as sharply as possible.
We are quite aware that there are real needs for testing, for the systematic compiling of data, and for rational decision making based on data, and in a later section we shall face up to these needs; at that point we shall try to demonstrate how the necessary jobs can be done more systematically and operationally in a school setting without losing our fundamental purpose. But, for the moment, we want to push all that aside in order to take a deeper look. Let us assume that all we have before us is a learner—or a group of learners—and a teacher, and that the only question is what will contribute most to the learning and the teaching. The fundamental purpose of diagnostic evaluation is the facilitation of student learning and student development.

Stripping the problem down permits us to conduct an inquiry into the essential nature of the educational process. We shall look at it first in terms of the student—what part evaluation plays in his development and how his learning can be developmental. To analyze this we have to go beyond the schooling situation, to ask more basic questions: What is the nature of human functioning? What forces impel a person to his state of being? Can his own evaluation shape his development? To deal with such questions, the author's conceptions have been somewhat influenced by a frame of reference which is called the "perceptual," "phenomenological," or "humanistic" approach in psychology (Hamachek, 1971). There is no agreement among educators with regard to the adequacy of this particular approach in understanding the nature of man and in applying it to educational practices. Obviously, the issue is not the major concern of this study; nor is it
our purpose to attempt to present a representative view of humanistic psychology. But the basic position taken by this approach seems to provide meaningful interpretations for human functioning, in the author's view.

For understanding human behavior, Bugental (1964) suggests five basic postulates for humanistic psychology that outline the scope of this frame of reference. They are:

1. Man, as man, supersedes the sum of his parts; man is more than the accumulative product of various part functions.

2. Man has his being in a human context; humanistic psychology is always concerned with man in his interpersonal potential.

3. Man is aware; whatever the degree of consciousness, man is aware of himself and his existence.

4. Man has choice; phenomenologically, choice is a given of experience.

5. Man is intentional; man's intentionality, his "conscious deliberateness," is the basis on which he builds his identity.

Understanding the nature of the learner and the teacher within this framework permits one to realize a great potentiality in the person and in the interactive process between the learner and the teacher. This also implies a different view of the teacher's use of evaluation. Again we must assume for the moment that the teacher is
not driven by any external pressure to produce grades as a means for evaluation; and let us assume that the evaluative practices he chooses are relatively free of time, financial, and organizational constraints. We shall cope with these constraints after we know clearly what jobs the teacher must accomplish to maximize his effectiveness in teaching the learner. His first concern, then, is for diagnosis—understanding—that keeps him aware of significant variables that matter and that helps him know how to proceed with his teaching. Another kind of concern is that of how to handle the process of diagnosis and evaluation so that, for the learner, it leads to encouragement and support rather than failure, to a realistic picture of the self rather than a distorted or abstract self-image, and to the involvement of the learner in a cooperative, ongoing inquiry. The problem is not so simple as merely getting a variety of "objective" data; there is a human problem, too.

The Person as a Critical Unit

Understanding the student as an integral being is the essential consideration in realizing the nature of the learner in the learning process. We have been accustomed to thinking of a student as one of many other students who are characterized and labeled in terms of grade (e.g., ninth graders), achievement (e.g., under- or over-achievers), social background (e.g., minorities), and other categories. We have also been accustomed to thinking of a student as selected "pieces" of the individual person, such as attitudes, behaviors, abilities, and values which are of interest to the educator. The assertion that a
person does, in fact, function holistically is well expressed by Ross Mooney (1967) in this statement:

The person is the critical unit for the human species. It is the person who knows or does not know, who seeks God or does not seek God, who produces or does not produce, who communicates or does not communicate, who solves problems or does not solve problems, who learns or does not learn, who perceives or does not perceive, who grows or does not grow, who exists or does not exist. The human race exists, packaged in its persons (p. 280).

A person's development or growth indicates the integrated pattern of being. Feeling, knowing, exploring, valuing, choosing, enjoying can all be seen as attributes of being, and yet lead to becoming. The process of growth, according to Maslow (1962b), is the process of becoming a person. The person is not the accidental result of what happens to him. The past exists now in the person in the form of experiences, needs, and accomplishments, and at the same time, the future now exists in the person in the form of ideals, hopes, goals, unrealized potentials, fate, etc. (Maslow, 1962b). Growth takes place when the next step forward is comprehended and intrinsically satisfying to a person. Only at this growing edge can the student learn; by attending to it, the teacher can help the learning effort which the student is making. Maslow (1962a) describes this state of stretching or extending from here to the next step forward as growth needs, as contrasted with basic or deficiency needs. He asserts that man is initially motivated by a series of basic needs; as these are satisfied, he moves toward the level of the higher needs and becomes motivated by them. The concept of growth needs brings an important perspective
Into the teacher's attention as he views the student as an integrated, dynamic, and ever-becoming person. When a student is motivated, the whole person is motivated, not just a part of him. When he is upset, he is upset all over, not just partially. In attending to such states of being, the teacher not only can detect what is basically lacking and deficient in the student, but also can cultivate higher level needs, growth needs, which are part of human essence.

The Person's Relating with the Environment

A person never exists in a vacuum; his state of development is closely related to the environment he is in. The person develops his identity in a human context, in relationship to others as well as in relationship to things or phenomena around him. Each of us lives in a world in which we act and which reacts to us, and the world known to each person is unique. Much of what happens to one person is much like what happens to other people, but each person uniquely develops the meaning of what happens, since he is the only one who has experienced in his way.

Mead (1934), in describing the social interaction processes involved in the development of the self, writes:

The self arises in conduct, when the individual becomes a social object in experience to himself. This takes place when the individual assumes the attitude or uses the gestures which another individual would use and responds to it himself or tends to so respond.... The child gradually becomes a social being in his own experience, and he acts toward himself in a manner analogous to that in which he acts toward others (p. 48).
The above description may be made clear by an example. Let us say that a child play-acts being mother or father. In his play, he talks to himself as his mother and father have talked to him, and he responds to this imaginary talk of his father and mother. Eventually, he comes to perceive himself as a social being in terms of what is expected of him in his role position.

It appears to be true that self-concept or self-identity is crucial for person development, and a person's self-identity is mostly affected by other persons and built within a human context. In other words, a person is the most influential one among other objects and phenomena in our environment. We may ask ourselves for a moment why that is so—and what is the basic nature of the person-relating-with-the environment. For understanding such nature, an outstanding model can be found from Ross Mooney's work on creativity and subsequent writings (Mooney, 1954; 1956; 1963).

His inquiry into creative behavior involves how the creative person handles himself in relation to (1) the extension of his experiencing; (2) the focusing of his experiencing; (3) the management of his actions during his experiencing; and (4) the derivation of significance from his experiencing. This leads to the four essential dimensions that, according to Mooney, are not only universal expressions of what was implied in the analysis of the behavior of creative persons, but also are the elementary conditions for existence of an organism. The conditions are that an organism operates as a system (Mooney, 1963),

(1) open to its environment,
(2) integral of its being,
(3) in **transactional** give and take with its environment, and
(4) **selectively** making fresh **fittings** (creations).

These four essential dimensions are illustrated by Mooney as shown in Figure 9. All four dimensions are important to notice, and in particular, the transactional aspect of the person seems to be a revealing principle as we discuss the nature of the person-relating-with-the environment. There is a constant giving out and taking in by the organism, a continuous transacting across the borders of a man to give sequential and orderly form to what goes on between inside and outside. Mooney illustrates this sequential, orderly flow by an infinity sign, with one-half inside the organism and one-half out, and with arrow markings on its line to show the out-and-in of the infinite flow as indicated in Figure 9.

What is symbolic in the infinity sign is that the transactions are not two separate functions of giving-out and taking-in; rather, what has been given out will come back in, although not necessarily in the same form. The nature of the object in the environment with which the person is engaging in transactions, and the richness of the person's perceptual field inside himself will be the major determinants of such transformations. The transaction between a person and another person will bring richer and more diverse kinds of transformations than the transaction of a person with an object will produce, since another person is operating within the same system of transactions. This is an important reason why we consider a human context, a person to person interaction, most crucial for person development. The process of
FIGURE 9
MOONEY'S FOUR DIMENSIONS
OF CREATIVE BEHAVIOR
sequential ordering is the process of becoming, the process of person development.

Our discussion implies, then, that our experience has some order in experiencing and also has meaning as it relates to the people, objects, and phenomena in our environment, and furthermore, the process of learning can be seen as a transactional process between the teacher and the learner. Again, it must be recognized that the student is not the only partner who is going to be transformed because the teacher is also to be changed by continuous in-and-out processes. To be effective in the learning process the teacher must allow himself to be open to the student in the environment, to focus his experiencing for further self-realization and self-differentiation, to transact with the student through giving-out and taking-in, and to be creative for new fittings. Moreover, the teacher should provide an environment and opportunities to the student who can function in the same fashion.

Concept of Selectivity

In order for a person to be integral in himself and to transact with the environment, the person must have boundaries in much the same sense that the physical body has to have a skin. The person has certain things that he will let in, others that he will keep out, and still others that he will tolerate. Some kind of boundary, a selective screen, is therefore essential to the maintenance of the self (Kelley, 1962). The permeability of this screen is determined by many factors. The nature of the environment, whether it is perceived to be helpful or dangerous, will partially determine the permeability of this screen.
That is, the more helpful, the less the need for protection. The more dangerous the environment, the greater the need for protection. Thus, under adverse conditions the screen develops into a shell, so that very little is admitted. When this process is continuous over a long period of time, that which enabled us to be selective in our perception becomes almost impermeable. Boundaries then become barriers; protection becomes isolation.

Previous experience supplies another basis on which selection is made. We all have a background of experience upon which perception, in part, is based. We find it more difficult to see that which we have had no experience in seeing. Furthermore, if the previous experience with a certain thing in the environment was enjoyable and gave the person a satisfying experience, this may reinforce more of such intake, and consequently, our selective screen may become more permeable to experiences of this type.

The additional element which seems to determine the permeability is the concept of "adequacy" that one has built in the back of his experience. As the person relates to the world around him, he is making choices among many possibilities in a way that allows him to express himself as a fully "adequate" person. If he is not satisfied with what he has done once, he attempts to change the relating somehow because he wants to be more "adequate" and more "effective" in relating as he conceives "adequacy" and "effectiveness." Each of us develops our own unique concept of adequacy, of which we are not always conscious and which is ever-changing. It must be noted that the criterion
of adequacy is critical in evaluation of ourselves and our development. According to Clark and Beatty (1967), adequacy is considered to be a set of standards which permit a person to say to himself:

(a) I am worthy, valuable, lovable, as is being shown in my relations with people.

(b) I am using things skillfully, effectively, as is shown by my successful coping with things.

(c) I am fully interacting with the world; I am counting for something; what I mean in the world leads to behavior, is tangible in the world, so that the world and I are fully, freely, satisfyingly open to each other.

(d) I am autonomous, fully determining my becoming in line with my understanding of the scheme of things (p. 53).

Although each of us has a different set of standards or criteria for judging adequacy, that set determines our selectivity to a substantial degree and, consequently, determines the direction of our growth. The direction of self growth and development is toward "the fitting" according to Mooney. The concept of adequacy incorporates the basic ideas involved in his discussion of selective fittings and creative action. Mooney (1963) describes this as:

Each act has its necessary specific fittings, according to what man's system then and there allows, invites and requires, and according to what his environment then and there offers, suggests and permits (p. 51).

One can well conceive the concept of fitting and selectivity in a concrete example. Let us think about a painter. When the painter works on a canvas, the eye and the mind of the painter are actually behind the strokes, so that when the strokes are right with respect to the eye and the mind, the picture is created.
Evaluating Nature of the Person

A person's efforts at selective fitting suggest that there are reflective moments for a person in assessing the meaning of his experience with the world. If we consider evaluation in a very global sense, it would be thought of as a mental resting point in a continuing process, the process of making meaning out of experience. So it can be said that evaluation is a basis for the selective function and thus a natural phenomenon of human functioning.

The meaning or the meaningfulness of experience can emerge in part through comparing one's relating-with-the environment to his concept of adequacy. Clark and Beatty state (1967), "Whenever the self-system perceives that its relationship with the world meets its concept of adequacy, the system strives to maintain the relationship. If, however, the relationship does not harmonize with what is defined as adequate, then the system must strive to alter the relationship toward adequacy" (p. 53-54). Thus, it is the nature of a person to relate and constantly to test and judge the results as well as the process of relating.

In the learning process, the student engages in a similar process of self-relating-with-the environment; oftentimes the immediate environment of the learner might be subject matter or he might relate directly to the classroom teacher. The relevance of a subject matter tends to be closely associated with the unique experiencing of the learner and the meaning he attaches to it. There are times when the student contemplates the meaning of his relating with the subject, compares his
relating, and tests the hypotheses. In order to be most helpful to
the student's learning and evaluating, the teacher can be an arranger
of opportunities—opportunities for contemplation, comparison, hypothe-
sizing, and testing of hypotheses. The teacher may provide judgments,
but his judgments must be based on an understanding of "where" the
student is in his own evaluation process without imposition by the
teacher of his own preconceived notion of adequacy. In so doing, the
teacher can be a real partner, attending to and sharing something
very meaningful to the student's development.

Development of a Concept of Diagnostic Evaluation

Diagnostic evaluation is not a new creation. It derives from the
old and common wisdom of the people who have been deeply concerned about
the human conditions in educational processes. The intent of the pre-
vious discussion is to reveal such conditions, conditions of personal
development, and to recognize that evaluating is part of human func-
tioning, part of educational experiences. Evaluation is more than just
means to ends; it is, and must be, educational in itself.

One may argue that the author's point of view reflects merely
values to which the author subscribes. The counter-argument to this
is that values are reflected in most of our designs of the educational
evironment in one form or another, and evaluation activities, which are
considered part of the educational environment, reflect values more
than most educational designs. It is necessary, therefore, for us to
make our values explicit and firm as a basis upon which associated
educational environments can be designed.
The conceptual fusion between diagnosis and evaluation can be built within such a value framework and it extends the search for insight into developing a concept of diagnostic evaluation.

An evaluation is "Diagnostic Evaluation,"

1. if the person--the client--in the educational program is the primary focus;
2. if it emphasizes the immediate state of affairs, but views them as dynamically continuing over time;
3. if it takes what the person naturally does when he describes, relates, explains, and judges as its basic processes;
4. if it accepts the person's conception of adequacy as a necessary condition and a source of criteria for judgment;
5. if it is oriented toward participation of the client, in that the potential of selective fittings to educational processes is included in criteria.

Elaboration of each characteristic follows hereafter.

The Person as the Primary Focus

Since it has been said that the person is a critical unit in the educational process, and that he is integral in himself, it is natural to focus on the client as the entity to diagnose and evaluate. The question is how we might be able to enter the personal dimension without distortion through compartmentalizing selected features of it
and yet capture significant aspects of the person as a whole. We call this place where we might attempt to transact with the client the "state of being." "State" refers to the cognitive as well as the psycho-social status in one's developmental stages; "being" represents existence of a unique person who has his own experiential fields from the past, is striving for his becoming, and yet exists in the reality where he is at a particular moment. This is the phenomenon that we are concerned with.

In order to attend to the state of the client, one may consider at least three dimensions: (1) personal functioning, (2) social position, and (3) subjects. We use the term "personal functioning" to refer to the properties of the individual, including overt behavior, motivational states, cognitive as well as perceptual operations. "Social position" is the status in which a person finds himself in relation to others. The third dimension, "subjects," represents the substantive nature of those concerns and undertakings of a person.

Operationally, we may collect information by allowing or encouraging the individual to respond: (1) through different aspects of his personal functioning, (2) with respect to a variety of roles or social positions, and (3) with respect to a variety of subjects as illustrated in Figure 10.

In the view taken here and whatever techniques the diagnostic evaluator might employ, he must be thinking at least in the above three dimensions. This is required because one's expression of personal functioning cannot be well understood without identifying the subjects
(1) Personal functioning may be in terms of:

- knowings
- values
- goals

- feelings
- experiences
- aspiration levels

- beliefs
- needs
e tc.

(2) Social positions may vary with regard to:

- peers
- nations
- generations

- families
- cultures
- sexes

e tc.

- schools
- ages
- group affiliations

(3) Subjects may be in areas of:

- academic
- economic
- philosophic

- vocational
- political

- esthetic
- ethical
e tc.

FIGURE 10
THREE-DIMENSIONAL ITEMS TO BE CONSIDERED
IN DESCRIBING STATE OF BEING
with which one is concerned or without knowing the social roles one is taking. For example, it is quite possible that an individual's value expressions with regard to vocational areas (e.g., choosing to become a mechanical engineer) can vary significantly depending on the situation—whether he is among his peers, in his family setting, or with members of the opposite sex. Let us take another example where the focus is on personal functioning rather than social positions—competency in numerical calculations. One’s cognitive knowing about basic principles of numerical calculation is accompanied by the belief he holds concerning the importance of accurate calculation, by the feeling of ease in doing it, and so on.

If we further assume that we can place one’s level of knowing, feeling, and beliefs on a continuum of high (or positive) and low (or negative), one’s performance of numerical calculation in the above example may indicate different positions or directions in terms of knowing, feeling, and belief. The positions in each continuum may be either "congruent" with each other or "incongruent." In the case of congruent positions, "directionality" may be indicated as a positive, a negative, or a neutral status. This notion of congruency and incongruency can be shown with the above two examples in Figure 11.

Such analysis may prove to be useful in conceptualizing and clarifying a problem under consideration by the three dimensions and categories of each dimension. It can also be helpful in identifying significant clues for realizing underlying dynamics through the display of directionality and congruencies across categories in any dimension.
**Example 1:**

1. The individual's **values**
   \[ \downarrow \]
   Personal Functioning

2. in the choice to become a mechanical engineer
   \[ \downarrow \]
   Subjects (vocational areas)

3. can vary in or with,

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<td>the Family</td>
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<tr>
<td>the School</td>
<td></td>
</tr>
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<td>the Opposite Sex</td>
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**Example 2:**

1. The individual's **competency in numerical calculation**
   \[ \downarrow \]
   Subjects (academic areas)

2. in **school**
   \[ \downarrow \]
   Social Positions

3. can vary with regard to his,

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**FIGURE 11**

ILLUSTRATIONS FOR USING THREE DIMENSIONS OF STATE OF BEING
In Example 1, the incongruency shown between values expressed with peers and those expressed in the family setting may indicate the difference of cultural norms possessed by the family and peers, or the difference may demonstrate the individual's conformity to the cultural norms. The congruency shown in Example 2 may be illustrative of a strong negative disposition toward numerical calculation. As we consider more than one individual's behavior, congruency and directionality across categories will form diverse patterns.

The categories or items listed under the three dimensions are by no means complete nor mutually exclusive, but are rather illustrative. Behavioral functioning is often expressed by a combination of knowings, feelings, beliefs, and so on. Those categories are difficult to separate practically, sometimes conceptually. The intent of such classification is primarily for clarification so that we can describe and explain the client better. The categories under the dimensions of social positions and subjects are self-explanatory, so definitions of the terms do not seem to be particularly necessary. But the selection of terms in the personal functioning dimension may need to be explained and the concepts may also need to be analyzed to some extent.

**Knowings and Feelings**

Above all, the terms knowings and feelings are chosen purposely in place of cognitive and affective domains, or knowledge and emotions which have been conventionally used and are still being used in the educational arena. In order for knowings and feelings to be part of
personal functioning, there must be (1) a person who knows and feels, (2) a process called "knowing" and "feeling" going on, and (3) results of the two previous steps--knowings and feelings--as illustrated below.

(1) one who (2) process (3) product
knows $\rightarrow$ knowing $\rightarrow$ knowings
feels $\rightarrow$ feeling $\rightarrow$ feelings

It is for this reason that knowings and feelings are not only the attainment (product) of cognitive and affective functioning but also the process of those experiences.

Another way of speaking about knowing and feeling is through forms or types of knowing and feeling. According to Soltis (1968), knowing takes at least the following three forms:

(1) knowing that...(e.g., knowing that Columbus discovered America)
(2) knowing how...(e.g., knowing how to swim)
(3) knowing to...(e.g., knowing to be honest)

Such a distinction helps to clarify knowing dimensions and can be especially useful in devising measurement tools for knowings. Feeling is defined (Wolman, 1973) as the subjective descriptor for awareness of something, including emotional states and bodily states. The author would add one more type, awareness of psychological distance from an object, to the above two. The three types of feeling states then include:

(1) emotional states (e.g., feeling happy, sad, angry, etc.)
(2) bodily states (e.g., feeling dizzy, hungry, etc.)
psychological distance from an object (e.g., feeling accepted, alienated, etc.)

The two concepts, knowings and feelings, seem to be focal to personal functioning, and require some degree of clarity in meanings.

**Values and Beliefs**

What a person values and believes constitutes another aspect of personal functioning. Regardless of the nature of values and beliefs, they are contributory to one's further knowings and feelings, and at the same time values and beliefs are often derived from one's feelings, sometimes from one's knowings. Since one's values and beliefs as well as feelings are not open to direct observation, assessment of these areas is mostly based on inference from overt behavior, verbal expression, or products of behavior. The issue of assessing values and beliefs is not that of obtaining right or wrong answers but rather that of how one can encourage free expression and can help to clarify one's values and beliefs.

The books *Values and Teaching* (Raths, Harmin, and Simon, 1966) and *Values Clarification* (Simon, Howe, and Kirschenbaum, 1972) deal with the issue thoroughly and also suggest practical strategies for use by teachers in order to get students to incorporate their feelings and values into their classroom responses. Raths and his associates (1966) see values as based on three processes: choosing, prizing, and acting.

Choosing:  
(1) freely  
(2) from alternatives  
(3) after thoughtful consideration of the consequences of each alternative
Prizing:  (4) cherishing, being happy with the choice
(5) willing to affirm the choice publicly

Acting:  (6) doing something with the choice
(7) repeatedly, in some pattern of life (p. 30).

Raths and his associates claim that those processes collectively define valuing, and results of the valuing process are called values.

Values and beliefs are also dealt with by Krathwohl, Bloom, and Masia (1964) in their publication on the affective domain of educational objectives. They classify three levels of valuing, each representing a stage of deeper internalization: (1) acceptance of a value at the lowest level, (2) preference for a value, and (3) commitment or conviction at the highest level. It is indicated that beliefs have varying degrees of certitude across the three levels. The third category "commitment," which is defined as "belief with little doubt" (Krathwohl, et al., 1964, p. 139), describes well what may be here classified as belief in personal functioning. Belief at this level, according to them, involves a firm emotional acceptance of a value upon admittedly non-rational grounds and loyalty to a position, group, or cause.

Experiences and Needs

These categories contribute to the understanding of the dynamic nature of the person; the present form of experiences and needs has its basis from past experiences and needs, and also is partly the product of an interaction between the person and the environment.

Experience is often assumed to be an accumulation of skill or understanding which is the result of practicing something. In the
author's opinion, experience is rather an active engagement with reality. John Dewey (1963) points out that experience is characterized by two major principles: the principle of continuity (longitudinal) and the principle of interaction (lateral). Experience consists of a series of relations between an individual and what, at each time, constitutes his environment.

To understand the concept of needs, Maslow's work (Maslow, 1954, 1962a) seems to bring an enlightening treatment by introducing growth needs in addition to the hierarchical nature of basic and deficiency needs. According to Maslow, the higher level needs do not appear until the lower level needs are satisfied. The needs hierarchy is arranged as follows from lower level needs: physiological needs, needs for security and safety, needs for love and belongingness, needs for esteem and prestige, need for self-actualization or growth needs—the highest level. If the teacher understands student needs in this light, the teacher can view his functioning as a growth potential.

Goals and Aspiration Levels

Goals and aspiration levels that one sets are the expression of intent for future performance and end results; they are targets aiming toward the person's future becoming. They can be explicitly described by the learner as well as by the teacher. It must be noted that the instructional goals are not the only goals, nor can goals be established only by the teacher. Goals and aspirations for a person's overall development have to be considered also. Goals may be defined as the
end result toward which a living organism is moving (Wolman, 1973). Aspiration level means the expected level of future performance (Wolman, 1973).

Again, the above eight categories of the personal functioning dimension neither represent a clear-cut classification nor an exhaustive list. The use of such a system will be helpful to the teacher or the diagnostician as they engage in the process of ordering the data on personal functioning and devising the best means for collecting data in relation to the other two dimensions previously described.

The Immediate View of Behavior

A fundamental characteristic of diagnosis, particularly in medical diagnosis, has been the historic view of causation. The historic view gives us help in understanding how an individual gets to be the way he is. It provides information about the person's past life and the forces that have been active upon him as well as about the conditions under which he now lives. This is a very important piece of information for a teacher to know about the student.

The historic approach is also useful when there is an opportunity to change the conditions under which a person lives—what might be called prescription. For instance, if we want to do something about the conditions surrounding a problem child, information about that situation must be obtained. Past educational efforts, especially in guidance, have been for this reason predicated on the belief that since behavior is related to the individual's past experience and influence from outside the individual, the history and influences had to be fully
known and all the data had to be collected if he was to be helped. This historic view obviously has merit in prescribing.

However, this view is not sufficient enough to explain or prescribe on two grounds. First, most important in understanding a person is knowing how he feels and thinks at a particular time—in other words, how he subjectively perceives the situation. This means that if we can understand how a person is perceiving right now we may be able to help him change his behavior even if we do not know how he got this way. The immediate view gives us information about why he does what he does when he does it. It means that teachers do not necessarily have to know all the past history of a student in order to affect change in his behavior. Field theory by Lewin stresses the presentness of the time perspective and the totality of the individual's life space. Lewin (1942) argues that "the effect of the past on behavior can be only an indirect one; the past psychological field is one of the 'origins' of the present field and this in turn affects behavior" (p. 218). His theory does not ignore entirely the individual's psychological past and future, but brings them into the present time perspective tied together as existing at a given time. This is also related to our second point.

The second point centers around the desirability of the historic view of causation in prescribing solutions. It is quite unlikely that a definite causal relationship can be established in the sense of knowing that the current state of affairs was caused by certain conditions in the past, even though this may be possible at times. To know
a concurrent relationship is not the same as establishing a causal relationship. Of equal importance is that we cannot always change the conditions which caused a phenomenon even though we know the causes. Suppose that there is a student who has behavioral problems and that we find out his parental relationship is not normal since his father is a sailor and is often away. Not only is it difficult to say that this abnormal parental relationship has caused his behavior problems, but also it is not always possible to change his father's job or parental relationship. This is especially true when we think about the kinds of control and influence a school has over the family and the community. Consequently, the historic view of causation and attention to the environmental conditions are not always the most effective way to deal with problems in the school.

The immediate view emphasizes particularly teacher sensitivity to student feelings. What a student really needs is sometimes not a solution given by the teacher, but rather the teacher's acceptance of his feelings as they are. This acceptance will be a stepping stone toward building confidence in students' work. Teachers all know that a "rational approach" toward problem-solving does not always work, but they may insist upon it more often than they want simply because they believe certain tasks must be done in a way for which the school is designed. To build confidence, the teachers do not necessarily need to know the history of experiences which have contributed to a student's behavior. Such information may be helpful, just as any information may be. The point is that we must have a view of what is essential
information for helping a student. The focus on the immediacy of
behavior or attention to state of being leads us to getting essential
information.

Since the information obtained by focusing on the immediate state
is only true at that particular moment, it is important to obtain
information periodically over time. Similar to a regular medical
check-up, the overall process must be continuing rather than a one-shot
approach or a pre- and post-comparison. Developmental patterns can be
observed through this continuing process of diagnostic evaluation.

The Process of Diagnostic Evaluation

The process of diagnostic evaluation starts with two interrelated
steps: sensing (or observing) and relating (or interpreting). By
sensing or observing is meant obtaining cues, evidence, and facts
through examining the individual functioning under a variety of condi-
tions. Relating or interpreting refers to making sense out of the
information bits obtained through sensing. These two steps are funda-
mental in the sense that they are what the person naturally does in
describing, explaining, and judging.

Obviously, diagnosis and evaluation include more complex processes
than do simple sensing and relating. The complexity is mainly depen-
dent upon the degree of intent to sense and relate, and the degree of
differentiation in the process. It is possible to assume that there
is a continuum of intentionality and differentiation under the two
fundamental steps. It is also true that the two steps, sensing and
relating, may simultaneously occur in reality. Based on the above
reasoning, we may diagram sensing and relating at one end of the continuum, and observing and interpreting at the other extreme as indicated below.

![Diagram showing the continuum of intentionality and differentiation]

When we watch (sense) a crippled child, for example, we may instantly associate (relate) him with the bodily handicapped. We are not deliberately attempting to evaluate nor to differentiate whether he is really a handicapped child or not. If we bring him to a clinic for examination, however, there is a clear intention to observe and the interpretation is going to be more differentiated with regard to the severity of the symptom, the anatomic portions, and other aspects. This example suggests that there is a difference between the use of the term sensing and observing, and the term relating and interpreting. But the nature of sensing and observing is basically the same; and so is that of relating and interpreting. Thus, as we discuss the process of diagnostic evaluation we are dealing with a process of differentiation and a conscious attempt on the part of the diagnostician to observe and interpret. How the process might become gradually more intentional and differentiated will be illustrated next.
1. We start with a simple two-step process: observation and interpretation. In fifth grade reading, for example, the teacher makes observations on a student's independent work and then interprets the general level of his reading ability. It can be noted that the observation made here is very much open-ended so that the teacher may just see the student reading a book eagerly, and he may simply conclude that the student must be reading well. The conclusion he draws is apparently tentative and the validity of such a conclusion is always open to question.

2. Since the interpretation is tentative, a more differentiated set of observations and interpretations may emerge. In the example given above, the teacher may arrange a conference with the student once he has learned that the student rarely volunteers to read in the class and that when he does, he is not reading well, even though he is doing fairly well in his reading tests. There is a clear awareness of anomaly—the recognition that the student's behavior has violated the teacher's expectations that govern reading behavior of normal children. Anomaly in this case may be a real deficiency in reading or perceived discrepancy by the teacher between student reading behavior and the teacher's expectations, which may happen to have been unrealistically set. If the anomaly is perceived by the student himself, his expectations may also have to be incorporated into those of the teacher. This perception of anomaly (Kuhn, 1962) is a necessary condition for the teacher to arrange an opportunity to deal with the anomaly. At the conference, the teacher observes and may lead the conversation more directly to the verbal behavior of the student. If the teacher is an
effective diagnostician, he will not just pour out questions but will, rather, encourage the student to express whatever he has to say about it. Thus, the observation at this stage can be characterized by the clear attention of the teacher to a rather particular setting (conference) and to a more specific behavior (verbal). Through the conversation with the student he may find out that the student has some sort of auditory difficulty, even though his interpretation of the student's self-report may be tentative again. The interpretation derived includes a basis upon which the validity can be further examined and a hypothesis may be formulated that the reading problem is connected with an auditory difficulty. The hypothesis is only an implication for a relationship between the two, not a statement about a causal relationship.

3. The third set of observations and interpretations may include the administration of informal diagnostic tests and interpretation of the results. It is evident that the observation process is well-structured in terms of controlling stimuli (i.e., items chosen in the test represent a sample of possible stimuli) and response styles (i.e., he must give his answers in a specified form). Interpretation of the results is also more differentiated with regard to the hypothesis previously established in that the information is validated from additional and different sources of data, and in that reliability of the diagnostic tests themselves is included in the consideration. Thus, interpretation steps often involve generating hypotheses for the next observation step and the observation step in turn can be used in testing the hypotheses. The process then continues through cycles with a
more or less extended exploration of the area of anomaly. It includes the gradual emergence of both observational and conceptual recognition, and the consequent change of the teacher's theoretical assumptions and expectations with regard to reading. Change in the teacher's assumptions and expectations is often accompanied by resistance. Kuhn (1962) refers to this change of expectations as paradigm shift. If the teacher, in the example given, expects and assumes that auditory difficulty in reading can be simply treated as a sensory impairment from a physiological point of view, it would be very difficult to change his assumption to include the psychological deafness as a result, for example, of verbal aggressiveness of parents. The issue here is not only that the teacher has to be competent in the substantive as well as diagnostic skills, but also that he must be courageous enough to confront his own assumptions, values, and expectations. This does not mean, however, that it is only the teacher who must change his expectations; it means that examining one's assumptions and expectations is crucial in reformulating a problem for solution.

4. The process of diagnostic evaluation, therefore, ends when the problem under consideration is reconceived with necessary adjustments made with regard to the teacher's expectations as well as with a well-discriminated area of anomaly and its magnitude determined in the student behavior. Our understanding at this level can provide a range of possible alternatives for correcting the difficulty with a much greater chance of adequate solution since we have come to know so much more concerning both the problem in the student's world and the teacher's conception of the phenomenon.
In summary, the process of diagnostic evaluation is viewed as a discovery process in that the diagnostician's observation and interpretation become increasingly intentional and differentiated as the process moves toward a reconception of the problem. The illustration given in this section unfolds some generalizations regarding the intentionality and differentiation, focusing on a teacher's diagnosis of the student reading problem. Due to the nature of the illustration, the reader may think that the process of diagnostic evaluation can be used only for correcting deficiencies and problems. This is not the case. Perception of "anomaly" could also include the recognition of behavior which is functioning at a much higher level than the teacher's expectation; in other words, it could be that the teacher is trying to recognize a growth potential and that the growth potential must be observed and differentiated in a similar fashion through the process.

The Concept of Adequacy as a Source of Criteria

The emphasis on personal functioning and the immediate state in the diagnostic process requires a new source of criteria for judging the effectiveness of personal functioning. The concept of adequacy, as has been introduced in relation to a person's selective function, may serve such a source of criteria. Each individual tends to develop his own conception of adequacy regarding himself as well as other individuals, and to apply this conception to his judgments and evaluations. And yet such a conception is vague and not well understood
even by the person who uses the term. It may be necessary here to clarify the concept of adequacy so that we can find a common ground for communicating the concept and being explicit about our own conception.

There seem to be at least two ways of examining the concept of adequacy: (1) adequacy from a viewpoint of developmental tasks, and (2) adequacy of a person's relating capacity. These two aspects are somewhat complementary to each other although the emphasis given here is more on the latter. Each aspect is further explained.

A concept of adequacy stems from the viewpoint of developmental tasks which the individual must learn and do when he reaches a certain age. They are the things a person must learn if he is to be judged and to judge himself to be a reasonably happy and successful person. Havighurst (1953) defines a developmental task as:

A task which arises at or about a certain period in the life of the individual, successful achievement of which leads to his happiness and to success with later tasks, while failure leads to unhappiness in the individual, disapproval by the society, and difficulty with later tasks (p. 2).

Learning to walk during infancy, learning to read in middle childhood, and learning to behave acceptably toward the opposite sex in adolescence are examples of these tasks. Timing and sequence are very important in applying the concept of developmental tasks to the judgment of adequacy; e.g., a child goes through the stage of spontaneous interpersonal feelings before he develops moral and social feelings of cooperation (Piaget, 1967). The idea of developmental tasks and
stages appears to be useful in providing a basis on which teachers and parents may determine the adequacy of a child's development.

Let us, for the moment, take a close look at the kinds of tasks present in the adolescent period. Havighurst (1953) explains three general areas of developmental tasks for adolescence: achievement of peer group relations, development of personal independence, and development of a philosophy of life. These tasks and sub-tasks, by nature, are not articulate enough to provide any direction for us to follow in determining whether an adolescent is adequate or not. Rebellious group behavior of high school students may be quite adequate in achieving cohesive peer group relations, but that behavior may not be viewed as adequate for many other reasons. It is also open to discussion whether or not the educator's and the adult's view with regard to "what must be learned" is ever communicated to the students who must learn those tasks.

The expansion of living environments of the adolescent, increasing influences by societal forces, and rapid change in modernizing society add to the complexity of the problem. That is, there is no such thing as a certain number of skills that, once acquired, would make a person capable of coping in all times and at all circumstances of his life.

Thus, the notion of developmental tasks may provide a general sequence of development so that one can judge the adequacy of a student's functioning in terms of his stages. However, the remaining question is "can we know what must be learned by the youth?" And if so, can it be shared and deemed worthwhile by the youth themselves?
Developmental tasks are only partially useful in answering these questions.

Now we turn our focus to the second point, a person's relating capacities as a source of judging adequacy. When one functions adequately as a person, he effectively establishes relationships with something. In order to establish relationships with something, one must receive it adequately, express it adequately, and transact with it adequately.

Receiving includes: sensing, perceiving, feeling, listening, taking in, etc.

Expressing includes: answering, responding, telling, showing, presenting, etc.

Transacting includes: acting with reciprocal relationships in a disciplined, sequential manner.

Most of our judgments in educational practices have been based exclusively on expressing modes, such as responding to oral or written tests, presenting an essay, showing a product, and so on. Holt (1964) illustrates well in his book how smartly students just pick "the right" answer from certain clues from behavior of the teacher without really knowing what the question was. The right "answer" was the name of the game. Judging adequacy mainly according to expressive behavior is not sufficient; and even when expressive behavior is considered, it must allow more diverse ways of expressing rather than just a right or wrong response. Before we question whether a person is adequately expressing his thoughts and feelings, we may have to consider whether he is attentive, whether he is open to his environment, or whether his sensing
mechanisms are adequately developed. Also significant is the adequacy of one's engagement and transaction with a person or something in the learning environment. Adequate transaction means whether the person is sustaining relationships, mastering the orderliness or discipline in transacting with an object, and progressing toward further in-takes and relationships.

Judging adequacy based on such relating capacities of a person places emphasis more upon the process of learning—"how" one can learn—than upon the product—"what" one must learn. An adequate person is a person functioning effectively in relation to others by seeking a better fit for himself in the environment at a certain point in time. A person's relating capacities require an adaptive or a creative mode of behavior. In order to use such a mode of behavior as a source of criteria, one must help find a situation or create a situation where the student can choose freely among alternative ways of receiving, expressing, and transacting, and where the student can cooperatively pursue intended outcomes and share the effectiveness of the pursuing.

In summary, the concept of adequacy can be used as a primary source of criteria for judging effective functioning if the concepts of adequacy possessed by each participant in diagnostic evaluation are made explicit and shared. In doing so, one may look at developmental tasks and at a person's relating capacities; the two points contribute to the understanding of adequacy in terms of general stages of development and the effectiveness of the immediate functioning.
The Adolescent as a Participant in the Process of Diagnostic Evaluation

Adolescents in the traditional student role are often perceived as powerless and passive recipients of another person's evaluation and decision. There is, however, increasing concern among educators who are concerned with the need to help these youngsters attain recognition as worthy participants in the determination of their education, for developing and testing options that will allow the student to be involved more actively in the educational processes (Sanders, 1974).

We must examine further what it means to consider adolescents as participants in the educational enterprise generally, and in the evaluation process particularly.

A statement once made by someone in a graduate course has generated some thoughts in the author's mind. The statement was simply that, "high school students are not lovable in the first place. That is the problem." The fact is that adolescents will never be the way we adults want them to be, even though our knowledge about adolescent needs and development may be enhanced, and even though better means to deal with such needs may be devised. Friedenberg (1959) describes well the relationship of adolescents and adults in our society. He believes that:

1. Adult society is manipulating the adolescent through conflict and crisis.
2. The manipulation will result in mass conformity.
3. The process deprives the adolescent of important experiences of establishing his own identity and
thus minimizes adolescence as a developmental phenomenon.

A research study done by Coleman (1961) also claims that there is a distinctive culture of adolescence and that only a few threads connect the adult and the adolescent society. In a sense, the adolescent is the forerunner of our culture in transition. Changes in attitude by adolescents are the most talked about, the least appreciated, and even the most feared by adults. These are the conditions of adolescent living. Their basic needs are the establishment of identity from the conflicting pressures of three almost equally dominant institutional norms: family, school, and societal norms.

Thus, inviting adolescents to be real participants in the educational enterprise requires recognition of the basic cultural norms in adolescence and the acceptance of differences in the adolescent culture which may be substantially different from adult views and consequently, which may be threatening. Such recognition and acceptance must also be extended in order to arrange opportunities for adolescents to select among alternative choices. One's feeling of being part of the educational process can be derived primarily from the opportunities provided for making his own selections and continually testing his fitting in the settings which are created by his selections. Full participation of students, of course, is not complete freedom on the student part; it is rather a cooperative exploration of what is to be shared and how to reach a decision on significant matters of adolescent education. A decision, if it is a wise one, is rarely made by some authority, but
is often reached through mutual agreement between the most important participants.

In the process of diagnostic evaluation, we view adolescents as participants since they know where they are in their own terms, they need to share their ideas with adults, and they need help in evaluating alternative choices for their further growth. The teacher in this process is not the authority, providing wisdom and making judgments for the adolescent, but rather is another participant engaging in the same process who can assist students in finding out where they are, can share what he values and believes with them, and can cooperatively decide what must be done. This does not mean that teachers should all turn psychologists or psychiatrists either. The point is that teacher attitudes toward evaluation should be reformulated.

The basic attitudes of the teacher, if he is willing to take a diagnostic evaluator's role, must start with the acceptance of adolescents' expressed needs, that should be taken as indicative of transitional culture, be responded by the school situation, and be used for further cultivation of their growth needs. Moreover, the teacher must initiate the building of a "diagnostic relationship" with the student on an individual basis through which the student can select and make choices for himself.

Such a relationship is likely to be established if the adolescent finds himself engaged in the process of diagnostic evaluation in the following fashion:

1. There is a communication between the teacher's intent to help and the student's intent to be helped.
2. The student's own feelings and knowings of himself are taken into consideration in the teacher's observation of the phenomena under diagnosis and evaluation.

3. The interpretation of facts obtained by the teacher suggests to the student alternative ways of establishing and testing hypotheses.

4. The student in fact makes a choice among alternative hypotheses as he finds himself fitting with the choice.

5. The concept of adequacy possessed by the student as well as that held by the teacher is made explicit and shared.

In addition, there must be mutual trust and a feeling of belongingness, that are essential in any good relationship, in order to include adolescents as participants in the process.

Types of Diagnostic Evaluation

The previous discussion so far has dealt with five characteristics that explicate different facets of diagnostic evaluation. In order to translate those ideas into a more operational form, three types of diagnostic evaluation are proposed: sequential, differential, and dynamic.

Developing the three types is based primarily on extending the process dimension beyond the level of discovery, explained in the earlier section. The same principles of discovery will be applied, but we will set some parameters under which each type of diagnostic
evaluation operates. Major parameters include: (1) the primary context where diagnostic evaluation is undertaken, (2) the role of a diagnostic evaluator, and (3) resources required to conduct diagnostic evaluation.

In sequential diagnosis,¹ the primary context is the individual learner's states; the role of diagnostic evaluator can be taken by the classroom teacher; extra resources are not essential. In differential diagnosis, the primary context is a group of individuals or a classroom setting; the role of diagnostic evaluator may be taken by the classroom teacher with the help of a specialist or other staff; extra resources are required. In dynamic diagnosis, the primary context is the school or an organization; the role of diagnostic evaluator may have to be assumed by a specialist; a provision for extra resources is essential.

Before our discussion goes into details of each type, two points need to be made clear. First, we do not intend to lose our primary focus—the person or client in the educational program; therefore, shifting to different levels will only permit us to describe more fully what is interconnected around the learner and the teacher. Second, introduction of a specialist role must be based on first "what must be done" and then "what the specialist will do." In other words, the person who is to conduct each type of diagnostic evaluation is indicated under the general rule described above, but a specialist may be needed in sequential diagnosis if the problem at hand is beyond the

¹In naming the three types of diagnostic evaluation, "diagnosis" is used instead of "diagnostic evaluation," simply for a matter of convenience, e.g., sequential diagnosis in place of sequential diagnostic evaluation, differential diagnosis for differential diagnostic evaluation, and dynamic diagnosis for dynamic diagnostic evaluation.
scope of the teacher. The author's position in this regard is that the role of diagnostic evaluator can be assumed primarily by a classroom teacher and secondly by a specialist. The specialist is the one who provides technical help to teachers; the teacher can examine the reliability and validity of his observation by checking with that of the specialist.

Sequential Diagnosis

Sequential diagnosis is based on the two fundamental steps, namely observation and interpretation. A repeated cycle of observation and interpretation forms stages of diagnosis. The number of cycles or stages can vary depending on many variables. For a teacher's use, it seems necessary to have at least seven stages, which include three cycles of observation and interpretation, and a prescription stage. Thus, sequential diagnosis, which is a temporal extension of observation and interpretation, is viewed as a particular seven-stage process of diagnostic evaluation. The seven stages are explained below, and the sequence of information flow is diagrammed in Figure 12.

Stage 1: The Initial Acquaintance Stage

At this stage, the teacher gets acquainted with a student through direct contact, observation, or other means. The teacher will pay attention to the student from this stage. The information obtained here is limited to the identification of the student and a brief description of how he gets into the teacher's attention.
Stage 2: The Reflective Stage

The teacher reflects on the initial acquaintance with whatever data he has at hand. The focus of reflection may be more on the teacher's perception and his views with regard to the student than on the actual state of affairs. The teacher must decide if he is to continue the diagnosis beyond the reflective stage. If so, he must find a setting where he can make an informal observation and/or hold conversations with the student.

Stage 3: The Informal Observation Stage

The observation at this stage is relatively unstructured, perhaps accompanied by a conference. The teacher may think in terms of the three dimensions of state of being—personal functioning, social position, and subject matter—and pay special attention to feeling states of the student.

Stage 4: The Image Stage

The teacher interprets what he has observed, establishes an image of the student's state, and produces a synopsis. The synopsis may be developed in a written form which includes information with regard to the current states of being, concerns or needs if any, and the areas unknown and to be pursued. A preliminary classification of information bits is necessary.

Stage 5: The Assessment Stage

At this stage, a more structured observation or more formal techniques are employed in order to obtain information about the student in the specific areas identified above. If instruments are not available for a particular area, assessment tools may be devised with technical
help from a specialist. The data may be collected from diverse sources—such as school files, interviews with parents or other teachers, and so on—depending on the issue under consideration.

Stage 6: The Inferring Stage

The teacher must first check the consistency of data from different sources. If the data show a significant degree of inconsistency, the assessment has to be repeated before interpretation of results can take place. The outcomes of this stage include a classification of data, a comprehensive interpretation of results based on comparison of modal behavior patterns, and perhaps an inference of possible explanations. Participation of the student during this stage is necessary in order to communicate the nature of the interpretation to him to elicit his help in interpretation and to explore alternative solutions seen by him.

Stage 7: The Prescription Stage

A solution among alternatives is prescribed based on mutual agreement between the teacher and the student. Implementation procedures for the prescribed solution may be delineated by the teacher; follow-up of the case is needed.

The seven-stage sequential diagnosis is diagrammed in Figure 12. As indicated in the diagram, there is a general flow of sequence; there are also feedback flows (shown as broken lines), and some stages may be skipped. For instance, by-passing Stages 5 and 6 may happen often by classroom teachers simply because they do not have the time or expertise to do an assessment. It must be noted that the locus of
FIGURE 12
THE PROCESS OF SEQUENTIAL DIAGNOSIS
attention in observational steps (Stages 1, 3, and 5) is different from that of interpretation steps (Stages 2, 4, and 6). In observing, the teacher pays attention to "out there" as openly as possible at the beginning and moves toward a more structured description. In interpreting, the teacher internalizes what has been observed "in himself" so that his hypotheses with regard to the situation can be tested at the following stage. The differentiation is not always possible in practice, but the more clear the distinction, the more effective it can be.

Sequential diagnosis is intended primarily for the classroom teacher's use as the teacher engages in diagnostic evaluation on an individual basis. We believe many good teachers behave in a fashion similar to this. They have not been explicit enough in what they do, however, and perhaps they have not become as systematic as our outline envisions. Combining this sequential process with the notion of "state of being" and the three dimensions described earlier will help the classroom teacher to be more explicit and systematic in diagnosing the student.

**Differential Diagnosis**

Differential diagnosis is a method of arriving at a diagnostic evaluation summary through comparing possible alternative explanations. In order to provide alternative explanations, we first identify different types of data, relate them to each other, and compare them with criteria for learning and development. The kinds of data selected
should represent the different facets of the unit under diagnosis and should be essential to comprehend the state of affairs within the unit.

An illustration of differential diagnosis is shown in Figure 13. Three types of data are established as basis for our illustration of differential diagnosis: (1) the learner's state, (2) learner-teacher interactive data, and (3) the socio-psychological climate of a setting. These three types of data tend to be essential aspects when we consider a classroom or a group of students as a context for diagnosis. In the illustration, arrows pointing in both directions indicate relationships between the different types of data, while arrows pointing in only one direction indicate comparisons of data with criteria and the movement toward the summary of diagnostic evaluation. The reasons why the above three sets of data are chosen and the nature of the data may need further elaboration here.

The choice of the first type, the learner's state, has been substantiated throughout this chapter and is our primary focus. The understanding of the learner's knowing and feeling states is necessary to help the learner.

Interactions between the teacher and the learner constitute the second type of data. These interactions are regarded as the major events in a learning situation. A descriptive analysis of interactions between the teacher and the learner can provide information useful not only for evaluating, but also for planning and executing teaching. This type of data can be obtained by using classroom observational techniques; readers may find periodical reports by Simon and Boyer
FIGURE 13
AN ILLUSTRATION OF DIFFERENTIAL DIAGNOSIS
informative in this respect. Among various techniques we would prefer to use one which can describe well the learner-teacher relationships during instructional events, e.g., Observational System for Interactional Analysis (OSIA) by Hough and Duncan (1970). The emphasis here is on instructional aspects rather than on socio-psychological states in the classroom, although the two tend to be highly related to each other.

The third type of data, socio-psychological climate, refers to the general atmosphere of the environment from a socio-psychological point of view. The setting could be a classroom, or a group of individuals. Literature generally indicates that certain aspects of the classroom climate and school culture are modestly correlated with student learning and/or innovative practices in school (e.g., Anderson, 1970; Halpin and Croft, 1962; McDill, et al., 1969; Sarason, 1966, 1971). The climate may be described in terms of psychological intimacy, morale, trust, consideration, and acceptance of others' feelings. The techniques for gathering information on this aspect should be able to describe and analyze group dynamics as well as individuals' psychosocial states with regard to the atmosphere.

Another crucial task that the person who undertakes differential diagnosis must deal with is the development and articulation of criteria. Two types of criteria need to be developed: criteria for learning and criteria for person development. Criteria for learning are employed in evaluating the learner's capability in a specific learning situation; criteria for person development are employed in diagnosing the learner's general status of development. The previous
discussion on the concept of adequacy can be useful for the latter—
criteria for person development. The two types of criteria must be
compatible with each other and major differences between the two are
those of specificity rather than difference in kind. The actual
development of such criteria is not the job solely of the evaluator
or teacher; it must be done cooperatively by all involved staff members
and/or students. As the criteria are developed, they must be articu­
lated to the major participants in the process so that they can serve
as bases for teaching and learning in general.

Once the criteria have been developed and data from the three
sources collected, comparisons must be made among all combinations of
relevant pairs, or other statistical analysis techniques may be used so
that the evaluator can reach interpretations and alternative explana­
tions. A summary statement may consist of descriptions or explanations
of state of affairs, possible causes, and prescriptive recommendations
for further action.

As contrasted with sequential diagnosis, differential diagnosis
starts with a wider scope of the diagnostic field; major evaluation
activities can occur almost at the same time. Thus, much more rigorous
work and well-planned designing on the part of the teacher or evaluator
are necessary. The classroom teacher undertaking differential diagnosis
may need help from a specialist who has capability and training in the
area. He may need cooperation from other classroom teachers, teacher
aides, or other staff members, but he must conceptualize and manage
the process. Depending on the nature and scope of the problem under
diagnosis, he may establish different sets of data and may identify more or less than three types of data. For instance, student-student relationship data may be more useful than teacher-student relationship data if the problem being analyzed involves fighting among students from different ethnic groups.

The specialist role in differential diagnosis would be that of a conceptual facilitator, participant observer, and/or measurement specialist. Moreover, the observation from an outsider would be crucial in bringing up a fairly accurate picture of the setting by pointing out not only weaknesses of the group but also its strengths, which may not easily be seen by those who are deeply involved in the group activity.

Dynamic Diagnosis

Since educational diagnosis in the most desirable form should be an ongoing process and should be directed toward prevention rather than remediation, dynamic diagnosis is proposed to meet such needs. Dynamic diagnosis is a combination of sequential and differential diagnosis, and operational considerations are built into the system. It is intended primarily for diagnostic evaluation at a school building level, but it may be applied to larger organizations.

Our discussion first is on the nature of dynamic diagnosis. It should be remembered that we not only consider learning of the learner, but also teaching of the teacher; a school is a particular organization to serve both purposes simultaneously. The general process of sequential diagnosis is applied to the different types of data that we establish
in differential diagnosis. For dynamic diagnosis at a school level, we may include the following types of data:

(1) the learner's state,
(2) learner-learner interactive data,
(3) learner-teacher interactive data, and
(4) socio-psychological climate of a school.

The learner's state is diagnosed by a subject matter teacher (e.g., an English teacher, a math teacher, and so on) in a particular subject and by an adviser in overall development. The advisory concept in the high school will be dealt with in a later discussion on operational considerations. The general procedure for diagnosis of the learner's state of being will be the same as that for sequential diagnosis. The learner's own self-evaluation should be encouraged and reflected in prescription and in evaluation records. Development of criteria for learning and for person development is a cooperative venture between students and the adviser. The adviser's evaluative activity may interrelate with that of a subject matter teacher, administrative staff and parents. Summative data on learners' states are more frequently collected, perhaps every month, than any other type.

Interactions between learners are considered to be another possible type of data. A classroom teacher may want to know the characteristics of a group of students in his class in order to plan teaching strategies. The procedure for diagnosing interactions among students will again follow the general pattern of sequential diagnosis. The criteria may also be developed in terms of adequate peer relations; and sociometric
methods may be useful in the diagnosis. This type of data may be collected two or three times a year.

Learner-teacher interactive data may be used for departmental (subject-oriented) committees, and could be used for cooperative evaluation and improvement of teaching in particular subject areas. Each committee may develop criteria for adequate teaching and also develop learning goals in each subject. Classroom observations could be made by teachers, rotating roles as an observer and a teacher, or by trained teacher aides. It may be necessary for an evaluation specialist to provide help in this respect for some observational techniques require more skill than most teachers have. This type of data may be collected every other month.

The socio-psychological climate of a school is another type of data we need to consider. An important element of this category is the formal relationship between the principal or other administrative staff and the teaching staff. The principal's leadership, not only as an administrative head but also as a professional helper for teachers, is crucial in understanding formal relationships. Another element would be the informal relationship among the staff members.

Since socio-psychological climate means such diverse characteristics of a setting, we may need to develop a conception of the climate or adopt a framework from available sources. Havelock (1970) suggests five variables in characterizing an organization: goal clarification, structure, openness, capacity, and reward. This may be a useful way of organizing and obtaining data on organizational climate.

So far we have discussed four types of data, the nature of the data, criteria, the person in charge of each area, and the frequency
FIGURE 14

AN ILLUSTRATIVE FRAMEWORK FOR DYNAMIC DIAGNOSIS
of a cycle as in sequential diagnosis in general. They can be summarized in Figure 14, which must be considered only as an illustrative framework, since it does not show how the information flows and feeds back to different data bases, nor how it relates to the regular school program. The comparisons of data with criteria are indicated with lines which appear to be relevant. The frequency of a cycle may vary depending on many factors; by a cycle is meant a general process of sequential diagnosis. The sequence and time necessary for each stage of sequential diagnosis are rather flexible. For instance, the learner's state may be checked monthly, but it may not include tests every month. A brief conference between the student and the adviser may serve the purpose. We can assume that dynamic diagnosis is unlikely to be implemented without a specialist or special training of the total staff. We may also have to think about information storage and retrieval systems which can efficiently handle essential data. The following section deals with the issue of implementation of diagnostic evaluation in schooling.

**Strategies for Implementing Diagnostic Evaluation**

In implementing diagnostic evaluation in a school, consideration needs to be given to at least three areas: roles, utilization of information, and structural arrangements. Strategies proposed in this section may result in a design which could be used in an ideal setting where the fundamental purpose of schooling and assumptions about the nature of man are consistent with the position taken here by the author, and where resources are available.
Roles

In order for the classroom teacher, or rather subject-oriented teachers at the secondary school, to be involved in the diagnostic process on an individual basis, an advisory system is proposed. Currently, no individual teacher really is responsible for any specific student; guidance counselors do not appear to have enough time to spend with all students regularly. All teachers might advise between twenty and thirty students and meet them individually. An adviser who assumes responsibility for diagnosing students' overall growth and for communicating with parents of those students, can be assigned to, or preferably be chosen by the student. The adviser may undertake primarily sequential diagnosis in encountering with his students. Active participation of the student in the process would have to be encouraged.

Since the teacher's main task is teaching of a subject area, his involvement in diagnostic evaluation is more than undertaking sequential diagnosis as an adviser. He is concerned with the learners' states in his class and with the effectiveness of his own teaching in his subject area. In other words, he may participate in differential diagnosis. If he takes a role of evaluator in this context, his clients are not only a group of students but also himself as a unique member of the group. Since he is an actor himself, the totality of the learning and teaching field may not easily be grasped objectively by him although he may have a better feeling of the setting at a given time. Therefore, he needs to receive assistance from his colleagues, or a specialist who could provide information for the teacher—the kinds of information which may not be obtainable otherwise. We may call this teacher who
undertakes diagnostic evaluation to facilitate teaching and learning in his classes a "teacher-diagnostician."

Cooperative work and sharing of information between teachers are necessary to implement a teacher-diagnostician role in a school. If the conventional notion of the self-contained classroom does not prevail in a school, the school may find it easier to encourage cooperative evaluation and diagnosis than in a conventionally organized school. Nonetheless, a crucial factor in implementing the role of a teacher-diagnostician is the teacher's capacity and courage to see himself as a subject, to test his effective functioning, and actively seek for further testing.

In addition to the above two roles, those of adviser and teacher-diagnostician, there should be a specialist role in order to fully implement the notion of diagnostic evaluation. The specialist may be called a diagnostician or a diagnostic evaluator. The primary responsibilities of the diagnostician may include providing technical help to advisers and teacher-diagnosticians and conducting dynamic diagnosis for the school, although he may eventually be involved in all three types of diagnostic evaluation. Technical help may include locating information sources, providing data gathering tools, and arranging referrals. The specialist cannot conduct dynamic diagnosis by himself but he is the one who probably conceptualizes the client system, the school, in such a perspective that it can be viewed as a facilitating organization for learning and teaching; he identifies potentially significant levels of data, he develops criteria and an overall design, and lays out tasks to be performed by members of the organization.
FIGURE 15
A SIMPLIFIED ILLUSTRATION OF ROLES
AND TYPES OF DIAGNOSTIC EVALUATION
The diagnostic evaluator role may be performed by school psychologists or guidance workers if they have training in classroom instruction and social psychology in the school. He who takes the role must be a keen observer and have a wide range of knowledge. He may need supporting staff, at least for gathering information, storing information, and making it accessible to the school staff.

The three roles here proposed and types of diagnostic evaluation are diagrammed in Figure 15. The figure simplifies the major responsibility and diagnostic relationships that the adviser (A), the teacher-diagnostician (T-D), and the diagnostic evaluator (E) may have. The diagnostic relationship is viewed as a reciprocal or transactional relationship between the person who diagnoses and the client. It must be noted that when there is a transaction, the diagnostic evaluator may not actually be outside the system boundary of the client as shown in the diagram, but may rather be part of the system and be able at times to act as if he were outside.

The way information flows is also indicated in the figure. The adviser may seek information from the data obtained through differential and dynamic diagnosis. The data base of dynamic diagnosis may include information from advisers and from differential diagnosis. The data in differential diagnosis are shared with those in dynamic diagnosis, but the data from advisers may not be included in differential diagnosis. This aspect is dealt with more in the following section.

Utilization of Information

Keeping records and having a data base seem to be against the basic principle of diagnostic evaluation, since it has been argued that
the immediate state of being is the primary focus. However, it seems almost impossible to undertake dynamic diagnosis without a mechanism which can retain a memory of what has happened in different fields and at different times. Caution must be exercised in the "utilization" process; and the emphasis must be on whether the data are used in such a way that they can be of help in understanding the immediacy of the state of affairs. An important criterion for including any information bits in the data base is the meaningfulness of information and the frequency of use by the staff and the students. At least three kinds of data bases are conceivable.

First, individual records of the students in charge are filed by advisers. The individual record includes a copy of all the evaluation of student performances, test results, conference notes, information about students' home background, anecdotal records by other teachers, students' self-evaluation, and so on. Only the adviser may have to have the right to determine whether the information about his advisee can be passed on to others, although he can seek information relevant to the advisee from other sources. The adviser has the responsibility for communicating a report on the students' performance and development to their homes, in that the adviser's description and interpretation of the student status should be included. It is crucial to protect the privacy of information generated in sequential diagnosis and the confidentiality of those files kept by the adviser.

The second type of data base keeps information generated within the school, mainly information from dynamic diagnosis. The specialist
may establish this by identifying variables at different levels and
by collecting, analyzing, and storing data on those variables. It
may also be specified as to who can have access to what type of data.
It may be wise not to start with too much data and too much paper work.
The school staff may have already been loaded with paper work. It may
be useful to eliminate data collection and record keeping which do not
prove to be of any use for an extended period of time. In this regard
the conventional grading system, reporting system, and testing programs
need to be re-examined. Then, we may focus more upon the essential
data in facilitating learning and teaching directly. Provisions for
maximum access to and efficiency in this data base may be more important
than the amount of data collected and stored.

Third, a data base is necessary to link the school to the resources
and information outside the system boundary. Resources outside the
school may include universities, libraries, clinics, hospitals, employ­
ment agencies, other schools in the same district, etc. As prescrip­
tion is a natural extension of diagnosis, the information on outside
resources is an extension of the data base inside the school. These
outside resources not only have information on the concerns the school
may have, but also can provide technical assistance to the school.
This linkage seems to be crucial if we view the school as an organiza­
tion which is interlocked with other social organizations in modernizing
society. Identification of those resources available outside the school
would be the first step in order to establish a linkage. Then we have
to find a way to use them in case of need.
Structural Arrangements

Ideally a school should have a specialist in order to implement diagnostic evaluation as part of the ongoing educational process in the school. If the specialist is not part of the school staff, arrangements should be made in such a way that he could stay in the school long enough at a time to grasp the totality of the school situation. Arrangements should also be made for the specialist to act as if he belongs to the system. In other words, his tasks and responsibilities have to be clearly delineated so that his requests for information from the regular staff, for instance, could be responded to legitimately.

Another consideration may center around the classroom teacher's role in diagnostic evaluation. The teacher, as we have indicated previously, assumes the role of adviser for a limited number of students and the role of teacher-diagnostician for his teaching classes. This will require the availability of a teacher's time as he becomes involved in tasks for these roles, and we have to make sure that the teacher has time available in organizing the schedule of the school.

Inservice and preservice training are another factor to be included in the organizational arrangements, since it is most crucial that the teacher know what he is to do in diagnostic evaluation. Inservice training should provide an opportunity for teachers to realize that evaluation is employed to help students and themselves rather than to judge, and that diagnosis is conducted to find growth potential in students as well as to correct difficulties they are facing. Above all, the teacher should reach a point where he finds himself learning
and growing professionally while he is teaching, and also realizes that the school can be a learning institution to all its members. This in fact places a new role that a school might take in the future and that may have to be considered in attempts to reform public education.
CHAPTER IV

FORMATION OF DIAGNOSTIC EVALUATION THROUGH WORKING WITH A SCHOOL

The previous chapter has extended the search for insight into the meaning of the major question, "What is diagnostic evaluation?" We have a theoretical perspective of the basic dimensions, relationships, and sequences required of diagnostic evaluation. However, we have little sense as yet of how diagnostic evaluation might function in a school setting which is not structured in the ideal form as we have described, but which represents an ordinary school in this country. Ultimately, diagnostic evaluation must be understood and applied in terms of the present form of schooling and practical considerations in these schools. Chapter IV addresses this dimension of our inquiry by returning to the specific problems which may occur as diagnostic evaluation is introduced in a school setting. Our initial point of reference in this chapter is a truncated project conducted in a small school district in central Ohio.

The project on the "Turned-Off Student Problem" was not intended to test ideas of diagnostic evaluation but to gain insights in the process of its formation. There were three reasons for this. First, at the time of our activity, the idea of diagnostic evaluation was not developed enough to test in a field setting, and secondly, the problem chosen for
The diagnosis did not call for a change in the evaluation system as a whole but for diagnosis with regard to a particular concern the school staff had. The final reason was that the scope of impact a team external to a school system could make was limited since it was formed only to respond to requests for help made by the school staff. In other words, the project was generated to help the staff diagnose the problems at a high school in the district. This project is of value to the present study, not as an exemplar in the application of diagnostic evaluation, but rather as a vehicle for extending and deepening our understanding of diagnostic evaluation. The present analysis is the result of reflection upon the author's own personal experience with the task force, the accumulated records throughout our activities, and the tape recording of the task force meetings.

The present chapter is comprised of three sections: (1) the description of the field site and the project, (2) an analysis and interpretation of the project experience in light of diagnostic evaluation and situational variables which were thought to be closely related to the project effort, and (3) the problems that might arise in implementing diagnostic evaluation.

**A Description of the Field Site and the Project**

The project was launched in a high school of a district located in central Ohio which serves students from suburban areas, small incorporated villages, and farm homes. According to student and staff perceptions, there was a potential conflict in the community between
people in the farm lands and people in the suburban area, and this was a factor contributing to the repeated failure of bond issues to provide funds for the construction of a new high school building in the system. The students represented a cross-section of socio-economic backgrounds. Per pupil expenditure for the 1972-73 school year was about $670 as contrasted to the county average of $708.33 and the national average of $1,017.67.

The school facilities included four elementary schools, one middle school, and one high school. The total student enrollment in the school district was about 4,000 as of October, 1973. The student enrollment at the high school, in which the project was launched, was 878 as of October, 1973. Due to the increasing enrollment and continued defeat of bond issues for construction of a new high school building, the school was over-crowded and had been forced into holding split-sessions to accommodate the student body.

The partnership between the school district and the Ohio State team was originally viewed as a possible extension of a previous project which the Ohio State group had with another school system, in which schooling was conceived of as a "helping system." A helping system is considered by the Ohio State team (Sanders, Coleman, and Covault, 1973) as:

...a social organization designed to provide services to its clients which will facilitate

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2 The OSU staff or team refers to the faculty members and graduate research associates at the Center for Human Resource Research who had been involved in a series of field-based projects. Membership at particular times varied but included Moshe Smilansky, Donald P. Sanders, J.D. Gammel, and Deborah D. Coleman, as well as the author.
the growth of their capacities to be in charge of their own development, and to cope with the problems and opportunities that they face (p. 3).

Through the experience of a previous project, the OSU staff identified a diagnostic system as a useful component of the helping system which needed to be further explored.

The superintendent of schools and the assistant superintendent accepted the notion of a helping system and shared a desire to work toward its development in their district. The ultimate goal of the helping system corresponded with the superintendent's concern with needs of the students and staff at the high school.

Thus, a diagnostic system had been chosen as the focus for further development of a helping system in partnership with those working in the field site. The two elements of the organizational format are the task force in the school comprised of teachers and administrators who volunteered for this work and the staff members from The Ohio State University.

Since the primary concern expressed by the school administrators was the problem of "turned-off" students, development of the diagnostic system was centered in an effort at defining the nature of the "turned-off" phenomenon, identifying a set of tools which teachers could use, finding out the factors which could explain and identify probable causes of the problem, and finally seeking means to help the "turned-off" students. In order to pursue the above goals, an OSU team consisting of three members was formed in early Summer, 1973. At that time, this author joined the team, assuming responsibility for the diagnostic
aspect of the project. Our involvement in the cooperative enterprise
was as consultants for the principal, who was to provide leadership
to the staff task force.

The major joint activities consisted of a total of ten sessions
of task force meetings, three planning sessions, and individual and
group interviews of students and informal observations at the school.
The above activities appeared to be the primary vehicle through which
the OSU team obtained and provided information to the school; the
purpose and format of each activity are further described below.

The task force meeting was intended mainly to serve two purposes:
working toward the project goal collectively as a group, and sharing
individual experiences with the members in the task force. The general
mode of inquiry at these meetings was group discussion, both in a large
group and small groups. The membership in the task force consisted of
thirteen members of the school staff, which was about one-third of the
total staff, representing the administrative side of the school as well
as the teaching staff from various subject areas.

A planning session was designed to review and plan the project
activity monthly with the superintendent, the assistant superintendent,
the principal, and the OSU team. The format of the meetings consisted
of presentations made by the OSU team and the school task force, with
regard to where we were at that point and subsequently reaching deci-
sions about the project direction.

Interviews of a sample of students at the school were proposed by
the task force and conducted by the OSU team with two more supporting
staff from the Center for Human Resource Research at The Ohio State
University. The purpose of the interviews was to find out those "honest" feelings of students toward the school which could be disclosed through interviews conducted by members of an outside group. The interviews consisted of (1) three independent meetings with individual students selected by the guidance counselor, and (2) three separate group interviews of students from Vocational English and Industrial Arts classes. The total number of students interviewed was about 30. The OSU team led the sessions with three key questions: (1) Why are the students there? (expectations toward the school); (2) Is there such a thing as the "turned-off" student?; and (3) if so, what could the school do about it? The results of the interviews and observations were reported orally as well as in a written form to a task force meeting.

Besides the above three major activities, the task force members attempted to pursue case studies individually and to involve themselves in teams of three with "turned-off" students, but only a few members undertook the task. The task force members, two at a time, also took responsibility for planning activities with the OSU team, leading the group sessions, and communicating with the staff members and the OSU team for two weeks. This rotating leadership was instituted in order to fill a leadership vacuum which resulted from the principal's decision to remain in the background rather than continue to take a leader's role in the task force. Involvement of OSU participants in the project was terminated after ten weeks of activity, once it was learned that the teachers would move directly toward implementing strategies for
solving the problem of "turned-off" students rather than engage in further diagnosis of the phenomenon based on the information obtained up to that point.

An Analysis of the Project Experience

Participation in the project was a useful experience, especially to this author. The analysis of the project activities may be rather experiential than evidential; it seems worthy of sharing in this section for two basic reasons. First, through participating in the project, some aspects of diagnostic evaluation were examined in its formation process, and secondly, certain situational variables were also uncovered through working with the particular group of teachers under the conditions given to us.

Although the author's primary interest was in the formation and examination of diagnostic evaluation, the situational variables were very much interlocked with the effort during the process of undertaking the project and therefore, they are included in order to interpret the totality of the experience.

The five-faceted characterization and three types of diagnostic evaluation as described in Chapter III were not individually explored through the project, but at a global level the project effort was an attempt consistent with the basic theme of the concept, and it is to be examined below.

The Formative Aspect of Diagnostic Evaluation

The object of diagnosis for the project was the "turned-off" student, with particular attention being paid to the state of being
"turned-off." This focus was consistent with the primary emphasis on the person in diagnostic evaluation. Among the three dimensions of state of being (see Figure 10), categories represented in the personal functioning and the subjects dimension were more often noted and discussed than those in the social position dimension. For example, students' ability in reading was a big issue in the discussion at the second session of the task force. If the staff members considered the dimension of social position in the effort to understand the reading problem, they might have hypothesized that there could be a difference between the level of a student's reading ability expected by the school and the level expected by his parents; this, for example, might be a factor underlying reading difficulty. Instead of approaching the issue by seeking more understanding, the group discussed mainly ways of screening the students who indicate reading difficulty, securing a reading specialist, and providing space for them. In other words, the group seemed to move immediately to action rather than toward fuller understanding.

With regard to the dimension of personal functioning, the staff focused more on observable behaviors of "turned-off" students than on students' own descriptions and interpretations of the phenomenon. Among the categories, the staff members tended to pay more attention to needs, knowings, and feelings. However, there were not noticeable shifts from basic needs to growth needs, from students' feeling states to knowing states, and from knowing states to feeling states. For instance, the staff was very much concerned about "feeling bored" among the
"turned-off" students, but could not explore the matter in terms of students' knowings of "being bored." Such a shift of focus from one category to another may imply that when we try to comprehend student functioning, we have to understand a student in terms of the relative aspects of functioning in knowings, feelings, values, and beliefs, so that we can comprehend the whole as a dynamic feature.

One reason why the staff members could not make such shifts might be that they tended to generalize what was known about a student or a group of students—for example, the phenomenon of feeling bored—to other students and to act as if they had known other students. A generalization or a step toward generalization might be difficult to reach until we know the related nature of personal functioning of a person at a particular moment. For this reason, a shift of our focus may have to be across categories first and then across persons. The phrase "focusing on the person" means focusing on his inter-related characteristics and integrated personal functioning rather than on any one separate aspect of a person found among many persons.

There was a chance for the staff members to explore this aspect through case studies of selected "turned-off" students, which for our work in diagnostic evaluation could have been a desirable opportunity to test basic ideas underlying our concept of state of being as well as to test a second characteristic of diagnostic evaluation, the relevance of immediacy of state of affairs. It seemed that the term "case study" set for the task force members a tone, or approach which emphasized collection of data on a case from all possible sources and also emphasized a historic view of behavior.
The emphasis on the immediate state appeared to be well accepted by only one member, as indicated in her progress report of a case study. She started with the immediate feeling states of the student and attempted to build a relationship from there. Unfortunately, her presentation did not stimulate group discussion among the members; the reasons why there was not much sharing were not clear at that time.

The process of diagnostic evaluation which was generally tried at the school was based on the principle of a natural inquiry process suggested in the previous chapter, and using the two fundamental steps of observation and interpretation. The OSU team did not lay out a set of procedures for the staff to follow; through repeating the two steps as a cycle, we thought a procedure would emerge and then the procedure would be better tailored to the staff needs and their capacity in diagnosis. It was expected that at least two cycles would be needed to assess the magnitude of the problem before a solution was sought. This expectation was based on our reasoning that by repeating three or four cycles, observation and interpretation would be intentional and differentiated enough to find a solution strategy. The intentionality and differentiation were viewed as a continuum underlying the process of diagnostic evaluation.

Interpretation steps were meant to be steps of relating data to the internal structure of the diagnostician himself or to personal meanings. What seemed to be apparent was that the teachers more often tended to relate data to such sources as group opinions, group norms, or non-normative criteria rather than to pursue what the data meant
to themselves personally. The intention to interpret data in terms of personal meanings did not increase as the process moved toward the later stages, while the intention to interpret data in terms of other normative or non-normative data increased. As a result, the staff members apparently did not want to see facts in the light of their personal belief, but tended to search for more facts "out there somewhere."

Two other remaining aspects of diagnostic evaluation are concerned with the concepts of adequacy and student participation in the process of diagnostic evaluation. The latter aspect was not attempted in the field study, even though the issue of student participation in the educational process was often discussed at the meetings. The concept of adequacy was dealt with in a way at the task force meetings. On one of the feedback sheets (see Appendix A) we asked the task force members to list as many adjectives as possible that could be used for describing, first, the most preferred student and then, the least preferred student they have in mind. The composite list seems to be suggestive of a relationship between characteristics of the most preferred student and the concept of adequacy; a relationship between those of the least preferred student and inadequacy, or the "turned-off" phenomenon. If a pool of such adjectives could be compiled, and an instrument, such as a semantic differential scale, could be developed or adapted to the problem, then we might be able to show the relationships and some indication of magnitude in those relationships. At this point, however, what we tried indicates only one way of attempting to clarify the concept of adequacy.
We also tried to bring up the differences in the conception of adequacy through comparing teacher perceptions of the "turned-off" phenomenon with student perceptions of the phenomenon in a paper (see Appendix B) presented to the task force by this author. The recognition of such differences was also viewed as an antecedent for students' active participation in the diagnostic process. The staff members seemed positive with regard to the substance of the paper, but did not attempt to use that information in such a way that they could serve as bases for criteria in judging the adequacy.

The three types of diagnostic evaluation—sequential, differential, and dynamic—were reflected in the course of the project in varying degrees. We could say that a sequential aspect of diagnosis was evident in the effort at conducting case studies on an individual basis and in the effort of the task force to diagnose the "turned-off" students on a group basis. Although sequential diagnosis has been described in Chapter III primarily as diagnosis at the individual level, it may be applied on a group basis. In the latter case, as we found out from the project, it was difficult to determine the stages where the diagnosis had proceeded because each member in a group was likely to be in a different stage from other members. The members in the task force undertook the task as if they were a group of diagnosticians and proceeded up to the "image" stage. The review of activities conducted by the task force was laid out in terms of sequential diagnosis\(^3\) in the same paper appearing in Appendix B.

\(^3\)The process of diagnosis shown in Appendix B is an earlier version of sequential diagnosis; readers will find that the process diagrammed in Figure 12 in Chapter III has been modified to some extent.
Differential diagnosis was attempted in a sense with a "Mrs. Jones Case" which a member of the task force presented and which was discussed by the task force. The case presented a situation in which students were "turned-off" by a change in staff and the new teacher, Mrs. Jones, was known as more demanding of the students. The students were, on the other hand, expecting the same level of requirements as those of the previous teacher. Suggestions for Mrs. Jones were made by the task force, such as "challenge students in areas of interest," "opinion of class is important—get their feelings," "teacher should lower standards," "evaluate teacher's personality and teaching methods," etc.

A progress report on the case indicated that the situation had been improved, but no systematic means were used to demonstrate the improvement except the feeling of the teacher, Mrs. Jones. From the above illustration, it seemed that differential diagnosis could be very useful for such a teacher in diagnosing and improving a situation in her class. The suggested areas for gathering data by the teachers in the task force included variables similar to those identified in differential diagnosis. But specific tools for collecting data in those areas might also have to be included in order to actually implement differential diagnosis.

The overall conception of the project could be viewed as a form of dynamic diagnosis, even though it was not tried in a fully elaborated form. The primary focus of the project was the "turned-off" students, but the "turned-off" students were not really a number of particular students who could be separated out from the total student
body. At later stages of the diagnostic process, they were seen by the staff as any ordinary student "who is often bored, difficult to communicate with, and somewhat distant and remote from what school offers and values" (Appendix B, p. 183). In our view, the particular concern the staff had chosen could not be adequately approached unless we viewed the school as a totality and examined dynamically various forces acting in the school system as a whole.

In this regard, the diagnostic function was suggestively assigned to the OSU team, and we had three types of data which could have been used: (1) learner's states seen through the case study approach, (2) school climate observed through interviews of students, and (3) school climate realized through observations of the staff task force. The main weaknesses of dynamic diagnosis as employed in that school was the difficulty of getting at the learner's states from the teacher's individual contacts. The importance of this has been stressed in the discussions of diagnostic evaluation in the previous chapter. This is closely related to the fact that the OSU team's major efforts with the project were centered on working with school staff as a group. The OSU team tried to assist the task force group as a whole to diagnose the "turned-off" students. It seemed to be the only possible way we could operate under the conditions given at that time, but it may not have been the most effective way. The remaining section deals with certain conditions revealed in the project experience.

The Role of Situational Variables

When a consultant is brought into a school system, he not only must establish a healthy relationship with the client system, but also must
not neglect to comprehend various characteristics of the system itself. Such characteristics may well indicate the capacity of a system to adjust to any change whether change is brought through outside consultants or not. Miles' (1969) notion of "organization health" appears to be very useful for explaining the system characteristics in this context. The client system we have dealt with could be identified either as an organization, or a task force group; we may call those fundamental characteristics of a system situational variables.

There is a basic rationale as to why we did not directly explore situational variables as a primary focus in the project. The strategy we had chosen was to help the staff diagnose the "turned-off" phenomena rather than to conduct a diagnostic study for the staff. To conduct a study for the staff might have been simpler, in terms of getting the diagnostic task done, rather than to help the staff to become involved in diagnosis itself. However, through previous experience with school systems, the OSU team thought that without direct engagement in the process of diagnosis the staff would not be able to "own" facts and solutions—if they were provided by outsiders—and, therefore, the problem would be likely to remain even though solutions were implemented. Our strategy called for building awareness of the "turned-off" phenomena, broadening the basis of such awareness, and defining the problem at a level where the staff could deal with it in the field. Although this strategy did not work out with the project, we still believe that it might work under certain conditions. Perhaps, these can be explored by the following discussion of situational variables.
Havelock (1970) suggests five salient diagnostic factors to be surveyed about the client: (1) goal clarification, (2) structure, (3) openness, (4) capacity, and (5) reward. They seem to represent situational determinants which affected the task force achievements and its direction. Our discussion of situational variables centers around the above five factors and is elaborated below.

The goal of the project was, at the outset, communicated in written and oral forms, but it was not clear to either the leader, members of the task force, or even to OSU members. Goal clarification does not consist solely of clarifying terms in a literary sense as one might assume. It may be, rather, a continuous process of approximation of goals by explicitly describing realistic expectations and establishing a continuity among the expectations toward some broad goal that will later be defined. The approximation can be made in two ways: one would be by establishing a continuity among group goals and expectations in a programmatic manner; the other would be establishing a congruency between group goals and personal expectations. In the project there were certain points where our goals were not clarified by effective approximation. First, the broad goal, a notion of the helping system, was not introduced to the staff task force because the OSU participants thought that it would rather attenuate the project focus. If the staff had had a clear connection between the diagnostic approach and the goal of a helping system, they might have been less impatient in pursuing solutions. Similarly, a connection between the diagnosis of the problem of the "turned-off" students and two activities--the interview and case studies--that the group explicitly decided to do at
the third session should have been clarified by the group in order to see the continuity between the two. Another point was that personal expectations of the project came up in the discussion in the meetings, but we did not deal with them effectively and instead, moved the project as if group goals and objectives were congruent with those of each OSU and task force participant. For example, the conducting of case studies was an objective honored in group discussions, but was not honored by many individuals, personally.

The second situational variable is structure. An adequate structure for achieving the project goals should include a clear understanding of what participants are supposed to be doing in the task force—in other words, a clarity in jobs, in roles, and in the sequence of activities. The tasks of the OSU team and the school staff were generally delineated but we did not have a series of activities spelled out for each session. Without knowing the nature of the group and its participants, it was difficult to lay out specific activities beforehand. Based on what we experienced in this case, we hypothesize that the group might have worked better had they had a much more specifically developed structure and, perhaps, stronger intervention by outsiders than we provided. We also hypothesize that the group might have been more efficient, if they had been exposed to active engagement in experiencing through some antecedent interventions. The antecedent intervention strategies for such a group might include use of group processes to help the participants be more open to their own personal values and beliefs as well as to those of other members.
Openness in communication is another variable to be considered. Setting up a special task force appeared to help the staff be more open to ideas from other members initially, but the openness appeared to the OSU group to be at a minimal level. The feelings of the participating teachers did not appear to be explicitly communicated. For example, during the discussions, few staff members challenged certain firm positions taken by the principal--e.g., the "turned-off" students are primarily the fault of the teachers. Responses to feedback sheets indicated the teachers' strong resentment toward the position. Communication was often in the form of one-way expressions on the surface level, and interactions among members were observed less frequently than we expected.

The fourth variable is system capacities which are presumed necessary to achieve stated goals. Capacities refer to the necessary skills of the staff and the needed resources in people, time, money, materials, and facilities. It was assumed that time constraints and relatively low enthusiasm on the part of staff members were among the factors that were weak in this setting. We do not know whether recruitment of volunteer teachers is the best way of forming a task force. There may be other strategies to recruit people who may not initially show much interest in the topic but who may need to be included for the purpose of group dynamics. Among the necessary skills, a leadership skill seemed to be very crucial in our effort. Two primary functions of the leader in a school task force group include responsibility for linking the work of his group to the rest of the organization or outside consultants and becoming a source of enthusiasm for the
significance of the task force's mission (Likert, 1969). To our observation, the principal seldom initiated a discussion of plans for our activity and seldom consulted with the Ohio State participants. The floating leadership pattern which was substituted did not seem to provide enough continuity in activities nor did it provide a testing ground for seeking a new leader. One might assume that if we had focused on more specific skills from the beginning, leadership might not have been so critical. Of course, this was not our intention in undertaking the project.

Reward to the participants is the fifth variable. The Ohio State team made available the possibility of offering university credit for the participating teachers if they decided upon clear objectives for the task force and achieved those objectives. It seemed contradictory, but was noted that those who showed much interest in credit did not participate in discussions about what they would like to accomplish, as eagerly as those who showed little interest. Support and encouragement by the district superintendent and assistant superintendent might also have been a source of psycho-social reward for the staff. It appeared, however, that these means of reward to the staff were not sufficient enough to motivate the staff members. More important might be intrinsic motivation of active involvement in the diagnostic process and group activity than any form of external reward.

Thus far, our discussion has been on what we learned from the project experience in terms of five major situational variables. The variables tend to interact with each other and result in a distinct
feature of the client system. Furthermore, the identification of the right entity and an understanding of the nature of the client system seem to be fundamental to outside consultants as they attempt to establish an operational partnership.

Problems that Might Arise in Implementing Diagnostic Evaluation

Certain problems that one might face in implementing diagnostic evaluation have been indicated in different places throughout the previous analysis. This section is an attempt to synthesize the issue of implementation and to further project meanings associated with the concept itself, as well as strategies for implementing the concept.

The core of the problem in implementation if we plan to use a strategy similar to the one we employed, seems to be the interdependent nature of the two areas we have discussed in the previous section, namely the concept of diagnostic evaluation introduced to the school and the characteristics of the client system disclosed as situational variables. The relationship between the two may be viewed as a linkage or partnership between the developer and the user (Havelock, 1973). If there is a strong initial linkage or partnership between the two parties, strategies in intervening with the user system could be more collaborative and less structured; and the intervening party may not have to be so sensitive to the characteristics of the client system. If there is not an initial linkage, however, strategies for intervention may have to be more structured and more coercive or conflict-raising at
the beginning; and the system characteristics may have to be examined more explicitly.

The point is that the linkage between a university team, if it serves as a consultant, and school practitioners is not likely to be strong at the beginning and even if it is, it is an artificial link which could be either stronger or weaker depending on what one offers and what one uses. From the project experience, it appears to be safe to assume that there was no linkage in this case to begin with. What seems to be most detrimental to the establishment of partnership between a university team and school practitioners is a big leap--between "anti-intellectualism" of the practitioners and "naivete" of the university team with regard to the reality of schooling. It could be categorized as one of those traditional "theory-practice" gaps but it was more than a conceptual gap. The more we attempted to narrow the distance, the farther the distance appeared to be. We do not have at this time adequate explanations for the fact, but we tend to believe that the gap is a real one and psychologically harmful for establishing a healthy relationship with a school system. This fact may have to be taken into consideration as we try out any notion of meshing the resources of a university with those of public schools.

If we generally assume that there is no initial linkage in a cooperative effort, the immediate task placed in front of a university team may be how one can get a sense of the client system and the situation, as accurately and as quickly as possible. Since each client system is unique and can be sensed from various aspects, it is necessary
to have a framework, such as the variables identified previously, in order to obtain an accurate image of the system. If these system characteristics are understood, the consultant's effort to offer new ideas could be more efficient at the beginning. In other words, the concepts and ideas introduced to the client may be tailored in suitable forms to the system, depending on its capacity, the primary user group, the system members' awareness and interest, and so on.

Another important area is the issue of "field testing." How can one test ideas while he is tailoring them to the system? If one is really concerned with the client's immediate welfare, ideas are unlikely to be "tested" in the sense that testing is used in a laboratory experimentation. This is a problem when a university or a research and development center approaches a school system to offer help. Oftentimes, offering help to a school is combined and confused with testing ideas at the school situation. One way of approaching the issue may be extending the notion of testing from the laboratory experiment sense to experimentation through goal convergence. This extended notion of experimentation has been called "evolutionary experimentation" by Edgar Dunn (1971). According to his concept, the experimenter is engaged in formulating and testing developmental hypotheses; the developmental hypotheses are not tested repeatedly under controlled conditions but rather are tested by the degree to which goal convergence is realized as a result of the experimentation. Using such a concept of testing may be a way of solving the dilemma on the part of the university researcher who wants to offer help and at the same time, to test ideas developed.
The discussion of problem areas dealt with so far is mainly based on the limited experience with the school staff. It is indicative of what one has to be prepared for even before new ideas are introduced. The primary concern in implementing diagnostic evaluation as described in the previous chapter may be with the reorientation of teachers' attitudes with regard to evaluation and its usefulness in learning and teaching processes. Change in attitudes would appear to require not only training in basic ideas included in diagnostic evaluation, but also personal trials of those ideas and a supportive atmosphere for those trials until new ideas become part of the teacher's personal functioning.

The final point of the problem in implementing diagnostic evaluation is the concept itself; it is necessary to clarify various aspects of the concept and to develop more operational translations of the theoretical formulations. Several points were indicated in the previous section. In order to test basic ideas, the arrangements should be made by which diagnostic evaluation on an individual basis is feasible. The process of developing a concept is viewed as an iterative, continuing process of experimenting with a conceptual formulation through testing in the field situation. The conceptual design presented in this study is only a developmental hypothesis in this sense.
CHAPTER V

SUMMARY AND RECOMMENDATIONS

The major outcome of this study is a conceptualization of diagnostic evaluation which has grown from three broad bases for knowledge: theory, field experience, and values. The review of literature on evaluation and diagnosis in Chapter II provides theoretical bases; the project experience with a local school illuminates field bases; and the perspective given in the beginning of the third chapter facilitates value-based knowledge.

This study can best be summarized by (1) presenting diagnostic evaluation through answering the same questions raised at the outset of the second chapter, and (2) indicating how each of the three knowledge bases is integrated into the answers given by diagnostic evaluation.

We will then examine briefly the concept as a whole according to the criteria, which are discussed in the first chapter, of understandability, generality, feasibility, and balance, so that areas for further study can be recommended.

Summary

Definition of Diagnostic Evaluation

Diagnostic evaluation can generally be defined as a process of observation and interpretation for explaining the present state of
affairs and judging the merit of a thing. The concept of diagnostic evaluation which this study particularly envisions is elaborated by five basic characteristics or conditions:

1. if the person—the client—in the educational program is the primary focus;
2. if the immediate state of affairs is emphasized but it is viewed as dynamically continuing over time;
3. if what the person naturally does when he describes, relates, explains, and judges is taken as a basic process;
4. if the person's concept of adequacy is accepted as a necessary condition and a source of criteria for judgment;
5. if active participation of the client is encouraged in the diagnostic process, in which the client's selective fittings to educational processes are included in the criteria.

If the preceding conditions are present, evaluation is called "diagnostic evaluation."

In most cases, definitions of evaluation and diagnosis tend to include evaluative or diagnostic acts and processes involved in those acts as the primary elements. For instance, evaluation is defined as description and judgment by Stake (1967a), while diagnosis is defined as the art, science, or act of recognizing disease from signs, symptoms, or laboratory data by Engle and Davis (1963). In the attempt to define
diagnostic evaluation, not only diagnostic and evaluative acts are included but also included are the prime foci in those processes, that is indicated in the first and second conditions above.

The process aspect, the third condition, can be seen as those acts commonly found in doing diagnosis and evaluation. The analysis of definitions of diagnosis and evaluation has pointed out overlapping between the two acts. Since there is a commonality between doing evaluation and diagnosis, a more fundamental form has been searched for. The basic process is, therefore, built on what the person naturally does when he describes, relates, explains, and judges. The rationale behind the fact that we have to build the process of diagnostic evaluation upon such a natural process is discussed in the third chapter.

The fourth and fifth conditions address the criteria for judgment. The concept of adequacy is introduced as a source for criteria in judging the effective functioning of the person; selective fittings of the person are viewed as criteria for judging his participation in the process of diagnostic evaluation and this will also serve as an ultimate criterion for judging the effectiveness of diagnostic evaluation itself.

Definitions of evaluation, especially those of Tylerian and the accreditation model, imply criteria for judgment, but those criteria are often derived from sources that have little relation to the major participants who evaluate as well as who are evaluated. We could say that the last two conditions of diagnostic evaluation are mainly based on the value perspective of the nature of man; man is viewed as having choice, intention, and his relation in a human context.
The definition of diagnostic evaluation given as those five conditions is neither descriptive nor stipulative, but rather "programmatic" in the sense that the definition contains prescriptions, values, and orientations as well as descriptions (Soltis, 1968). An effort to define evaluation in a programmatic sense seems necessary, since it is consistent with the generic nature of evaluation.

Purpose of Diagnostic Evaluation

The purpose of diagnostic evaluation is stated as facilitation of learning and teaching. Such a purpose may appear to be very global, but we are not discussing learning and teaching separately. We are stressing the concurrent event of learning and teaching between the private worlds of the learner and the teacher. Diagnostic evaluation is designed to help the teacher know "where the learner's growing edge is." If what the teacher offers is beyond the learner's comprehension, learning is not likely to happen; if what the teacher offers is what the learner has already mastered in his mental structure, it will only bore him. A concurrent event of learning and teaching can be facilitated by diagnostic evaluation, by its expository and explanatory functions.

The purposes of evaluation—exposition, justification of merit, and utility—and the purposes of diagnosis—explanatory and prognostic—that are summarized in Chapter II, are included implicitly in the derivation of the purpose of diagnostic evaluation. Field-based knowledge is also reflected with a different pattern in the purpose of diagnostic evaluation, in that explanatory or expository purposes (e.g., to define the "turned-off" student phenomena) were viewed as antecedents,
while utility-oriented or prognostic purposes (e.g., to provide practical solutions for the student) were seen as results.

A value framework is the major source for establishing the purpose of diagnostic evaluation and for setting a priority of those purposes. This is related to what has been discussed on goal approximation in Chapter IV. Facilitation of learning and teaching can be seen as an approximation of goals between two extreme poles. One end starts with a full explanation of the private world of the learner and the teacher; and the other end stands at purposeful teaching or prescription for student learning.

Entity of Diagnostic Evaluation

The entity or object of diagnostic evaluation is the person—the client—and primary attention is paid to the immediate state. The choice of the person as a primary entity is drawn more from the analysis of the diagnostic entity than from that in evaluation. Especially in recent literature, evaluation deals with educational programs and systems as primary objects. Even when the student is identified as a major object of evaluation, a particular performance variable of students has been the main concern; change in that particular variable has been used as an indicator of student growth.

An approach to taking the person as an entity is depicted by a three-dimensional schema of "state of being"; and ways of using the schema are presented in Chapter III. A person's state of being can be described, (1) in different aspects of personal functioning, such as knowings, feelings, values, etc., (2) with respect to a variety of roles as a member of a family, in school, in society, etc., and
with respect to a variety of subjects, such as academic areas, vocational areas, etc. Fundamental to the use of the schema is description of one aspect in relation to another so that a person can be dynamically interpreted and understood.

One can assume that such an orientation is strongly influenced by the perspective taken here, in which the critical unit is the person who constantly develops individuality in relationship to his environment which is relevant at a particular time and space.

A student who manifests the "turned-off" phenomena also indicates that he can be "turned-on" under certain circumstances where he is allowed and encouraged to function in an area in which he can demonstrate his potentiality and willingness to participate. For these reasons, diagnostic evaluation pays primary attention to "state of being" and the immediate situation where the client is.

Means for Diagnostic Evaluation

As means for diagnostic evaluation, two fundamental steps, observation and interpretation, are identified; the general procedure includes: (1) a repeating cycle of these two steps sequentially, (2) providing alternative explanations through analyzing differential levels of data in order to reach a diagnostic summary, and (3) an ongoing process of dynamic diagnosis by which members of an organization—a school—can engage in diagnostic evaluation at different levels, sequentially as well as differentially. Thus, three different types of diagnostic evaluation are formed: sequential, differential, and dynamic.
The two fundamental steps, observation and interpretation, have their origin in evaluation concepts as well as in diagnosis. For instance, Tyler's (1935) notion of appraisal and inference, Stake's (1967a) concept of description and judgment, and Engle and Davis's (1963) distinction between diagnosis as a mental process and diagnosis as the decision reached. The two steps also have origin in man's natural process of functioning, which is sensing and relating. As the process of diagnostic evaluation gains precision, these steps become more intentional and differentiated. This aspect is discussed in the description of the three types of diagnostic evaluation.

The three types are different in terms of functional level, role of the diagnostician, and resources required. With regard to functional level, the main attention is given to the individual learner's state in sequential diagnosis, to a group of individuals or a classroom in differential diagnosis, and to the school or organizational level in dynamic diagnosis. The three types are, therefore, not entirely alternative approaches. Sequential diagnosis can be viewed as an antecedent for differential and dynamic diagnosis; sequential and differential diagnosis can be seen as antecedents for dynamic diagnosis. This antecedent relationship, however, is not in terms of implementation processes—that is, in terms of which type we have to introduce first—but rather in terms of the actual operations of each type of diagnostic evaluation.

This perspective is necessary because the purpose of diagnostic evaluation is facilitation of learning and teaching, and the focus is
on the ultimate client, the learner. The concept of evaluation currently prevailing does not take this aspect into consideration and consequently, the ultimate client is not directly helped through the evaluation process. This was observed through the field experience with the project.

The Role of Diagnostic Evaluator

The role of a diagnostic evaluator will be assumed primarily by classroom teachers performing as advisers and teacher-diagnosticians, and secondarily by a specialist who has specialized training and background necessary for undertaking the tasks of diagnosis and evaluation. The main responsibility of an adviser is to engage in sequential diagnosis with a limited number of individual students in order to diagnose their overall growth. A teacher-diagnostician is the classroom teacher who undertakes differential diagnosis within a classroom context. The specialist is responsible for conducting dynamic diagnosis tasks which include designing of the general diagnostic procedure for a school, managing information bases, and providing technical help for the staff.

The position that evaluation can be done primarily by the teachers has not been well received by evaluation theorists or by school practitioners. On the other hand, educators support the idea that diagnosis can be done by the teacher (Smith, 1969). A large number of evaluation theorists indicate that evaluation not only has to be conducted by a specialist but also has to be differentiated in terms of evaluation functions, such as formative evaluation versus summative evaluation,
process evaluation versus product evaluation, and so on. School teachers may not believe they have to engage actively in diagnosis, as we observed through the project experience. This is based to some extent on practical difficulties of time, resources, and training. A shared responsibility for diagnostic evaluation by the staff members in a school seems to be a possible alternative to consider if it is to serve the purpose we stress.

In the discussion of roles, it should be noted that the diagnostic relationship is seen as a reciprocal or transactional relationship (see Figure 15) between the person who diagnoses and the client(s). This means that the diagnostician and the client form a new entity, if there is a genuine transaction between the two, and the diagnostician is not entirely outside the client system. In this way, diagnostic acts could be participatory and cooperative; the information generated from the relationship would be meaningful to both parties and useful for deciding subsequent actions. A cooperative relationship between the evaluator and the decision maker has been especially noted in writings of Provus (1971), and Worthen and Sanders (1973), but the nature of the relationship seems to be different from what we call a diagnostic relationship. The significance of partnership has also been indicated in the field experience described in Chapter IV.

Utilization of Information for Diagnostic Evaluation

Three types of information bases are proposed for diagnostic evaluation: (1) individual students' records filed by the adviser,
(2) data generated and stored within the school through dynamic diagnosis, and (3) a data base which contains supporting systems from outside the school boundary.

These are proposed primarily with the basic purpose, focus, and process of diagnostic evaluation in mind. The emphasis should not be on the static nature of data, but rather on the effective use of data, essential for undertaking diagnostic evaluation. Also important might be the quality of data and the mechanisms by which information is maximally accessible to the members in a school. These mechanisms are briefly discussed in the last section of Chapter III.

Thus far, an attempt has been made to summarize the concept of diagnostic evaluation through answering the six questions which are thought to be crucial to the evaluation and diagnostic activities. If the concept is examined as a whole, it could be said that the conceptual product can meet the criteria of understandability and balance, but it may only meet a minimal level of generality and feasibility. The major reason for the above judgment is that in this study operational guidelines and practical techniques for employing diagnostic evaluation are less emphasized than a coherent theoretical stand and value perspectives toward evaluation concepts. Furthermore, no empirical test of the concept using those four criteria was undertaken in this study. Therefore, the degree to which the concept is feasible and general will depend on the users and their level of understanding and attitudes toward the use of evaluation for learning and teaching.
Recommendations

A study producing mainly theoretical positions and concepts leaves many areas in need of additional exploration. In addition to field testing the ideas of this study, at least the following areas can be stated as needing further investigation:

1. the degree of congruence between the concept of diagnosis and prescription, the degree of influence of one to the other, or the ways by which diagnosis can be useful for prescription and prescription can be useful for diagnosis;

2. the need for identifying a set of techniques for obtaining data in each type of diagnostic evaluation: sequential, differential, and dynamic;

3. the need for developing instruments or techniques for collecting and using data on state of being, based on the three-dimensional schema; and

4. the need for extending strategies for the implementation of diagnostic evaluation; strategies may include a guidelines for in-service training of teachers, forms to be used for gathering and storing information, and statistical procedures to be used for analyzing data during differential diagnosis.

Since the primary objective of this study was concerned with processes of development rather than with validation, the major recommendation is that the results be field-tested by evaluators working at the secondary school level. Some portions of the concept could
be field-tested through a simulation with a group of students and teachers, but the concept as a whole must be tested in a school setting where these ideas can be taken as developmental hypotheses. As Huebner (1970) states,

The design is never a one-shot job with a state of completion; it is always in process. The designed environment is not something which stands as a symbol, as something to be admired. It is an agency of man and is designed to serve... Aesthetically, it must offer promise (p. 150).
APPENDIX A

A SAMPLE OF FEEDBACK SHEETS

USED FOR THE PROJECT
THIS I THINK

Directions: Complete the following statements. Give your immediate reaction to any aspect of the session.

I appreciate

I disagree

I learned

I plan

I wish

I feel

I think the group
THIS I THINK

Directions: Please complete the following statements. Give your immediate reaction to any aspect of the session.

I feel

I think we should

I don't like

I want

I wish other teachers in the group

Directions: Please think about any student who is most preferred and another who is least preferred. Try to list as many adjectives as possible which might be used for describing the two students you have in your mind.

Adjectives for the most preferred:

Adjectives for the least preferred:
APPENDIX B

A REPORT TO THE TASK FORCE
A REPORT TO THE TASK FORCE

Unhai R. Ahn
November 26, 1973

It seems to be an appropriate time for each of the task force members to examine what we have accomplished so far and to determine the future direction more clearly. Since it is my role to provide conceptual leadership in the aspect of diagnosing the problem of "turned-off" students, this paper is prepared for the task force with three purposes in mind: (1) to indicate where we are in the diagnostic process, (2) to compare perceptual differences of the staff with those of the student with regard to the turned-off student phenomenon, and (3) to lay out possible strategies and alternative actions to be taken by the task force. The data compiled through the interview of students, a list of symptoms, types, and possible causes of the "turned-off" phenomenon prepared by the staff at the first session, and staff responses to the feedback sheets will be bases on which the perceptual differences are to be compared. The attempt is neither to provide a practical solution nor to do an academic exercise, but rather to reflect what the task force has done within the conceptual framework of diagnosis so that a meaningful step of actions can be formulated collectively by the group.

Where We Are in the Diagnostic Process

What we have done may be viewed as a diagnosis of turned-off student problems at two distinct levels. At the first level we, as
a group, took the position of diagnostician to understand the "turned-off" phenomenon in order to improve the school situation. The focus is the school in this case, and the group feels something must be done for the school as an outcome of this effort. At the second level, each of us deals with individual turned-off students and is engaged in knowing where a particular student is, what his (or her) strengths and weaknesses are, and how to help him (her). This is an individual relationship through which you pay attention to the "state of being" of a particular turned-off student. This experience can be shared in the group; understanding can be increased more by confrontation and clarification of personal biases that we all have to some extent. Our discussion at the third meeting on October 18 well represents these two levels of diagnosis, when we decided to do interviews of student groups and case studies. Thus, we had the direction or the focus of diagnosis at two different levels. Nevertheless, how we can go about it was not so clear; that we may call the process of diagnosis. The procedural steps which Kathy Frink wrote are a good example of the diagnostic process—in dealing with individual students. We think each of the task force members will do (or has done) similar activities and will share them with the group.

The diagnostic process includes two general steps: appraisal (descriptive in nature) and interpretation (judgmental in nature). Both appraisal and interpretation may occur at the same time in practice, but we have to differentiate as much as possible that which is descriptive data from that which is judgmental data. Due to the lack of precise instruments to appraise the complex nature of the turned-off
student, our diagnosis at this point may heavily rely on our interpretation rather than on description. To avoid a one-sided, often biased interpretation, we have to ask ourselves, "Do you see what I see?"

Sharing at the group session has tremendous advantages in this respect.

Obviously, more elaborate steps are necessary to proceed diagnosis beyond the initial two steps explained. The diagram on the following page represents a general process of diagnosis. I advise you not to pay too much attention to the labels of each stage since they are tentative, but to think whether they make sense to you and to your experience with a turned-off student. Identify where you are and what needs to be done further.

A similar process can be applied to the "turned-off" phenomenon at the school level. As you may have noticed, "group" is written in parentheses for an individual in Figure 1. Through our group activities and interviewing of students I think we moved to Step 3 or Step 4 of the diagnostic process. We made the initial contact by starting this project and by establishing "turned-off" problems as a topic.

Now we have images of what a turned-off student is, even though we did not make a statement nor reach a consensus on it. We seem to agree, however, that a "turned-off" student is not only a problem child in a disciplinary sense or a student with low achievement, but could be also any ordinary student who is often bored, difficult to communicate with, and somewhat distant and remote from what school offers and values. The causes of the fact are diverse and complex—a teacher may contribute to some; individual family or one's social position may contribute to another; and the school system itself may be the reason also. The data
Interpretation Steps

1) Initial Contact Phase: select an individual (group), why, and when it is done

2) "Image" Phase: establish what he (it) is, decide what kinds of information are needed

3) Appraisal Phase: collect data on the individual (group) as well as contextual data (Ex: family background, grades, test scores, etc.)

4) Interpretation Phase: interpret strengths and weaknesses of an individual (group), infer possible causes of being the way he (it) is

5) Area Assessment Phase: focus on a specific problem or causes, select or devise techniques for assessment, and assess

6) "Either-or" Phase: either confirm your inference (Step 4) or assess another area until it is clear

7) Prescription Phase: prescribe solution strategies

Implement the Solution

FIGURE 1
A PROCESS OF DIAGNOSIS
we have collected so far do not provide a reliable or concrete stand in terms of significance of the causes or magnitude of symptoms throughout the total student body.

It is open to debate whether we are at Step 3 or Step 4. The point is not deciding either Step 3 or Step 4, but rather facing the issue whether or not inferences on causes of the "turned-off" problem could be made, based on the data we have now. One way of facing the issue, I thought, would be comparing or contrasting our perceptions of turned-off students, although it will not entirely answer the question.

Types and Causes of the

Turned-Off Student

The bases for teacher perceptions of the turned-off student problem are: (1) the composite list of types, symptoms, and causes of turned-off students we prepared at the very beginning session, and (2) adjectives of the least preferred students as a response to the feedback sheet of October 18. Student perceptions are derived from the report on interview results. Since there were no predetermined categories or structure in our data, similar responses are grouped together to make some sense out of the data. The following list is a rearrangement of responses which we have already obtained. Types and causes of the turned-off student are separately prepared. If the same response was written (spoken) more than once, the frequency is recorded in parentheses.
Types of Turned-Off Students

**Teacher Perception**

1. **Action type**
   - attention seeker
   - acting out hostility to get attention
   - exhibitionist
   - defiance (simple and aggressive)

   **Adjectives:** hostile (3)
   antagonistic
   aggressive
too talkative (2)
noisy (2)

2. **Apathetic type**
   - apathetic student
   - fatalism (I'm here only because I have to. Why care?)
   - meaningless education
   - bored
   - defeatist
   - no individual identity

   **Adjectives:** withdrawn (2)
   shy
   critical (2)
cyntical

3. **The "labeled" student**
   - dropouts
   - the handicapped student
   - chronically out of order

4. **The economically-oriented student**
   - working students

**Student Perception**

1. **Action type**
   - hostile

2. **Apathetic type**
   - dull, bored (4)
   - careless

3. **The "labeled" student**
   - dropouts

4. **The economically-oriented student**
   - little opportunity to learn at school
## Causes of Turned-Off Students

### Teacher Perception

**School Related**

1. **Courses and curriculum**
   - quizzes and tests
   - no success in certain subjects in school (2)
   - unfair tests and grading
   - basic skills problem
   - reading difficulty
   - in wrong course

2. **Teaching and teachers**
   - no personalism
   - too much structure (2)
   - tired in class.
   - trust in teacher
   - personality conflict (2)
   - favoritism
   - teacher failings

3. **Facilities and climate**
   - pushed around
   - carelessness
   - communication blocks
   - lack of reinforcement

4. **Rules and regulations**
   - inconsistent discipline (2)
   - drinking
   - split sessions (2)

### Student Perception

**School Related**

1. **Courses and curriculum**
   - lack of activities (4)
   - not much related to student life (3)
   - few interesting curricular experiences (2)
   - not enough electives
   - emphasis on required courses and college prep courses
   - boring (2)

2. **Teaching and teachers**
   - old-fashioned, routinized (3)
   - too much lecturing (2)
   - belittling students (2)
   - treat students only like students
   - antagonism to attitude that students are information absorbers
   - teachers—noisy, aloof, careless
   - lack of respect and trust on teacher (3)

3. **Facilities and climate**
   - too crowded (5), no place to go
   - no use of existing facilities
   - time pressure
   - power forces—teachers, the principal and assistant principal, board of education

4. **Rules and regulations**
   - arbitrary rules (2), teachers want conformity
   - unfair grading
   - split sessions (3)
   - too much disciplinary hassle (4)
   - use of drugs
   - smoking
5. Peer relation
   . peer pressure (3)

Out of School

1. Home related
   . home problems
   . parental education
   . family pressure
   . economic difficulty
   . student employment (work is more important)

2. Community
   . geographic spread and tension

As you review the above lists, you may find a lot of similarities of perceptions between the staff and student, and also some differences. It is interesting to see that the descriptive adjectives of the least preferred students are similar to the descriptions of the major turned-off student types. It should be noted also that a lot more hostile, aggressive actions from the turned-off student are perceived by the staff. In other words, to students the turned-off students are generally bored, careless students, while to the staff they are hostile, aggressive attention seekers as well as bored and apathetic. This issue needs to be probed further by the task force.

In terms of causes of the turned-off student problem, both teachers and students commonly think that split sessions, inconsistent (arbitrary) discipline, too much structured teaching (mostly lecturing), crowded room situation in the school do turn off a lot of students. Students tend to ask for more interesting, relevant learning experiences from
the school and more frequent use of existing facilities, while teachers think low ability in basic skills and academic failure are the main causes. Peer pressure is not perceived by the student as a major cause of the "turned-off" phenomenon, but it is by the staff. In general, the social climate of the school is characterized as careless, bored, rushed, and pushed around to both the teacher and the student.

Whatever interpretation each of us might have from the two sets of perceptions, the task force must focus first on the common variables (causes) for forecasting action steps which can be done at this time, and next on the different perceptions as a suggestive area for further study since there might be some other underlying variables causing the differences.

**Suggestive Actions to be Taken**

We may agree to the basic position that if there is no change, there is no need to study the problem of turned-off students. However, the task given to the group is study and action both. Study means further diagnosis of the problem in light of the diagnostic process described in the previous section; action includes modification of school conditions or teacher behavior that has been identified as a cause of the turned-off student and may be changed within the school capacities at this time.

It seems that there are three concurrent activities, in which each of us has to actively engage. The three areas of activities and specific tasks are delineated below.
1. Individual Case Study
   -- Coordinate schedules for sharing experiences in the meeting
   -- Develop a format for reporting (written and oral)
   -- Be known about who is working with whom and in what stage
   -- Utilize specific techniques of assessment

2. Diagnosis of the Turned-Off Student Problem at the School Level
   -- Identify the areas in which more diverse perceptions are found
   -- Decide what data needs to be further collected from the school
   -- Find appropriate techniques and instruments
   -- Schedule, coordinate data collection
   -- Collect data
   -- Analyze and report the result

3. Initiation of Changes in School Climate
   -- Identify school conditions that can be changed
   -- Identify teacher behaviors that can be changed
   -- Identify other areas that might be considered to be modified after the initial changes are made
   -- Find means for implementation
   -- Monitor the process of implementation

The task force has to think about the most valuable outcomes we would like to have at the end of this endeavor and clarify our tasks in achieving it. Again, my intent is not to provide a solution but to reveal what we have done within a broad perspective so that we can move toward a more meaningful step of action and learning.
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