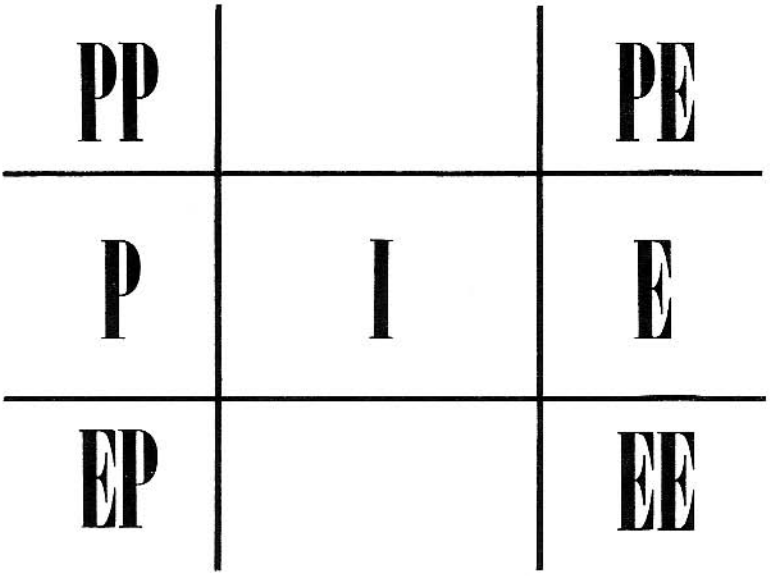
Mauritz Johnson

INTENTIONALITY IN EDUCATION

A Conceptual Model of Curricular and Instructional Planning and Evaluation



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A Conceptual Model of Curricular and
Instructional Planning and Evaluation

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Preface

Curriculum exists wherever instruction occurs. Because they are inseparable in practice, some educators and educationists are unable or unwilling to separate curriculum from instruction conceptually. This causes the kind of confusion in communication that would result if a traveler could not distinguish between his destination and the process of getting there, intrinsically related though they certainly are. Add to this an inability to tell the difference between the process of deciding on a destination and the resulting decision, between the itinerary and the trip itself, and between the conveyance used and the route followed, and both the traveler and anyone who tries to communicate with him are likely to become hopelessly lost.

it was while teaching a graduate course in curriculum at Cornell University during the 1960's that I first realized that the conceptual confusion which permeated the literature of the field made the writings on curriculum almost unintelligible to bright graduate students and made coherent classroom discourse extremely difficult. The root of the problem appeared to be definitional: either key terms such as curriculum and instruction were not defined, or they were defined and then not used consistently, or worst of all, they were defined in a way that did not make sense. Unfortunately, it was the most widely used definition of curriculum that appeared to be most defective. This definition identified curriculum with "planned learning experiences."

Still, despite protestations against separating ends and means, most educators seemed willing to grant that curriculum pertained to <u>what</u> was to be taught and instruction to the <u>way</u> in which it was taught, or in terms of learning, the former referred to what was to be learned and the latter to the means by which students were helped to learn it. It made sense to most people to say

that students were helped to learn through the provision of appropriate "learning experiences." Providing the experiences was an instructional matter. it did not make sense to say that the learning experiences were what students were supposed to learn or that one intended to teach the learning experiences. Yet, curriculum was what was intended to be taught and learned. Clearly, then, curriculum could not consist in learning experiences, and the planning of learning experiences had to be instructional planning, not curriculum development. Rejecting the prevailing definition of curriculum did not make curriculum development any less complex, nor did it provide any clues as to what ought to be taught, but it at least facilitated thinking and discussion about these matters.

In 1967 1 advanced this argument in an article entitled "Definitions and Models in Curriculum Theory," which was published in Educational Theory. The response, both positive and negative, was immediate and widespread. The article has been anthologized in two languages and cited repeatedly. For almost a decade since then, other bright graduate students-at SUNY-Albany have helped me refine and extend the ideas in the article, and this book presents the results of that process. Most students have found the material presented herein helpful to them in clarifying the relationships among various phenomena in the field and in constructing their own conceptual models as a basis for their professional work. Former students now teaching at Cornell University and at the College of St. Rose have used preliminary versions with their classes and also report favorable responses.

Much more thinking and study is needed than is represented in this volume. But inquiries from scholars around the world who have read the original article and sequels to it in the (British) Journal of Curriculum Studies (1969), Curriculum Theory Network (1970-71), and Educational Theory (1974) suggest an interest in the more coherent and comprehensive treatment presented here, unsatisfactory as it is. I will leave it to my former (and future) students and other interested readers to write more complete and definitive works based on the schema that has been outlined.

I wish it were possible to acknowledge by name all of those stimulating, thoughtful, and professionally dedicated graduate students who have challenged and helped me when my thinking was faulty or fuzzy. For the gaps, errors, and inconsistencies that remain they are not responsible--they did all they could to eliminate them. I do want to thank a number of splendid graduate assistants who gave me both logistical and intellectual support over the years: George Posner, Daniel Murray, Bernard David Wasserman, Harry Brooks, and Roslyn Herman. Vincent Barone and Daniel Linden Duke also contributed in special ways to my thinking when they were students with me.

I also owe a great debt of gratitude to my long-time colleague, Joseph Leese, who, while not always agreeing with my conceptualization of the curriculum field, consistently encouraged and facilitated my work in it. And, finally, I must not fail to express my deep appreciation to three competent, devoted, and charming women who made life more pleasant by the efficient manner in which they converted my words into readable form: Bettie Weaver, Elizabeth Niebuhr, and the typist of the book itself, Frances Hope Shambo.

M.J.

Albany,

The Bicentennial Summer, 1976

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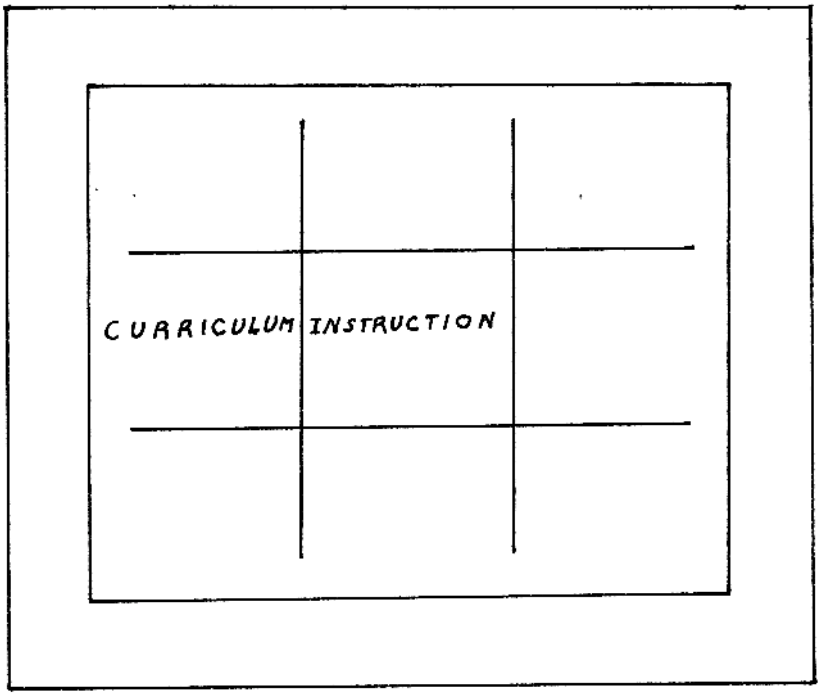


Chapter 1

DISTINCTIONS AND ASSUMPTIONS

1.1 Definitions and Distinctions

The terminology of a field labels the ideas with which it deals. Some terms are unique to the particular field, while others are general terms given special meanings. many terms pertaining to the field of curriculum have been variously and carelessly used, so that their meanings have become unclear. Sometimes two terms are used synonymously, and on other occasions a distinction is drawn between them. Not infrequently a term will stand for several dissimilar ideas. It is less serious that a thing have several names than that different things go under the same name.

This kind of terminological confusion is rare in fields where scientific definitions are used. When terms are used unscientifically, three kinds of definitions arise. A descriptive (Scheffler, 1960) or reported (Black, 1952) definition purports to indicate what a word is usually considered to mean. This kind of definition can be used for those terms pertaining to curriculum which have 'fairly well-established meanings. But terms for which this is not the case must be given stipulated definitions within a given discourse, whether or not those definitions ever become generally accepted. in this book, for example "curriculum" refers to "a structured series of intended learning outcomes" (Johnson, 1967). Elsewhere, a different term may be used for such a series, and the term "curriculum" may mean something else. It is not argued that the definition stipulated here is "correct," but that understanding will be promoted if the term is consistently used with that meaning.

There is a fine line between legislating a definition to promote understanding and doing so to promote some cause or program. A third kind of definition, called programmatic (Scheffler, 1960),

is one which alters, enlarges, or restricts the usual meaning of a word to serve some special interest or enhance a particular point of view. A strong element of persuasion characterizes programmatic definitions, in that if people can be induced to accept the modified definition, they commit themselves to an entire platform. Programmatic manipulations of the word "curriculum" have included defining it in terms of "experiences" instead of "subject matter," limiting it to "lifelike" experiences, extending it to encompass what was originally "extracurricular," and restricting it to the context of childhood.

Explicit definition of terms and consistency in their use may facilitate a clearer conceptualization of curriculum development and related processes. The introduction of novel terminology might minimize difficulties in accepting particular stipulated definitions for terms with which other meanings are already associated, but it has the disadvantages of proliferating jargon, making familiar phenomena seem esoteric, and imposing a formidable burden on the memory. Consistent usage aids in fixing the precise meaning of both familiar and novel terms, whether or not they are explicitly defined.

1.2 The Curriculum Literature

Since 1918, when Bobbitt wrote one of the first books bearing the word "curriculum" in its title, a large body of literature has accumulated on the subject. These writings are of three main types. The first is descriptive. It comprises books, articles, and monographs which are principally concerned with one or more of the following;

- 1.1 Historical accounts
  - 1.11 Curriculum content and organization in some past period or periods
  - 1.12 Curriculum development procedures in some past period or periods
- 1.2 Contemporary surveys

1.21 Curriculum content and organization in a particular contemporary society or political subdivision

1.22 Curriculum development procedures in a particular contemporary society or political subdivision

1.23 Comparison of contemporary curriculum content and organization in two or more societies or political sub-divisions

1.24 Comparison of contemporary curriculum development procedures in two or more societies or political sub-divisions

1.3 Specific reports

1.31 Curriculum content and organization in a particular institution, program, or project

1.32 Curriculum development procedures in a particular institution, program, or project

Whereas descriptive writings primarily attempt to describe as objectively as possible what was done or what resulted in one or more instances in which curriculum was developed, those of the second type are hortatory. They include:

2.1 Descriptions of advocated curriculums

2.2 Arguments for particular emphases in curriculum

2.3 Exhortations regarding curriculum organization

2.4 Recommendations concerning curriculum development procedures

While descriptive and hortatory writings may either be limited to a particular educational level or subject field, or be comprehensive in scope, writings of the third type neither describe

what is or was, nor advocate what should be. Instead, they attempt to explain the factors associated with curriculum and the relationships among them. Their concern is with what will or may happen under certain circumstances. They are often called "theoretical," but since little reliable theory about curriculum development exists as yet, "analytical" may be more accurate. Included in this type are those treatises which:

3.1 Report research related to curriculum development

3.2 Present taxonomies bearing on curriculum

3.3 Explicate the effects on curriculum of cultural changes and recent scholarship

3.4 Analyze concepts pertaining to curriculum

3.5 Synthesize new models of curriculum development and related processes

Parallels may be drawn between the three types of definition and the three types of curriculum literature. Descriptive literature corresponds with descriptive or reported definitions; hortatory literature, with programmatic definitions; "theoretical" or analytical literature, with stipulated definitions. The present volume may be identified as falling into the third type, particularly 3.4 and 3.5. It is ideological only in the sense of urging a rational approach to educational problems. No particular solutions in the form of programs, procedures, or organizational arrangements are advocated.

1.3 Theoretical, Ideological, and Practical

The distinctions among description, advocacy, and explanation identify three separate realms in which curriculum can be an object of interest: theory, ideology, and practice. No curriculum ever gets developed in the realms of ideology and theory, however. Curriculum development occurs only in the realm of practice. Making explanatory or persuasive statements about

curriculum is clearly not the same as making a curriculum. A student of curriculum who is also a practitioner may have responsibility in the latter role for engaging in curriculum development, but not in his[1] role as a student, which requires only his seeking to understand curriculum development. Presumably any increase in understanding gained as a student contributes to facility as a curriculum developer, and any experience in developing curriculum is useful in the quest for understanding.

In scientific research the gulf between the theoretical realm and the empirical world of practice must somehow be bridged. on one side are propositions expressed as statements; on the other are phenomena. Additional propositions can be deduced from given ones, and the deductions can be proved to be valid. But the factual truth of theoretical statements can be established only by testing them in the empirical realm, and this they cannot enter. To be tested, propositions (statements) must be operationalized, i.e. transformed, by a process that has been called "epistemic correlation," into predictions about phenomena (Northrop, 1947, P. 117). If the predictions are fulfilled in the empirical realm, support is gained for the truth of the statements in the theoretical realm. Ideas must be distinguished from realities, thought from action, concepts from their referents, explanations of phenomena from the phenomena themselves and from descriptions of them, speculations from tested knowledge.

Practitioners often confuse theoretical and ideological statements. Frequently, prescriptions for practice issued by someone advocating a particular ideological position are called "theories," and when efforts to put them into practice fail to yield the claimed results, they are said to be all

[1] The author regrets the absence of a generic third person singular pronoun in the English language but prefers the customary use of the masculine form to indicate both genders over awkward constructions designed to make the feminine inclusion explicit.

right in "theory," but not in practice. The prescriptions may have been misunderstood, incorrectly followed, ineptly executed, or inherently impracticable, but whatever the case, they were ideological statements, not theoretical ones. Theory does not prescribe; it merely seeks to explain.

1.4 Policy and Technology

Neither ideology nor theory is capable of directly affecting practice. What is advocated cannot be implemented until it is authorized. Legitimate decisions which authoritatively allocate values (Easton, 1953, p. 129) by sanctioning or ordering the pursuit of specified ends or the employment of certain means on the part of an organization are policies. Thus policy intervenes between ideology and practice. The adoption of a curriculum, therefore, is a political act. Policy decisions can be made only by those who have the authority to do so and the power to enforce them. Those who have this authority and power may or may not be the same persons who have the knowledge and competence to develop a curriculum or to implement it,

A policy which is impossible to implement obviously cannot be enforced. Further, it is impossible to adopt a curriculum that has not yet been developed. At the same time, theoretical knowledge and understanding do not, in themselves, prescribe practice. Intervening between the theoretical and the practical is the technological.

Technology is concerned with the development of effectiveness rules (norms). These rules tell practitioners what to do in a particular situation in order to achieve particular results. Sometimes the rules are in the form of statements giving procedural directions, and sometimes they are translated into material devices (tools), with additional rules for their proper use. In short, technological development involves the invention and validation of methods and materials for application in practice. This development is often prompted and facilitated by theoretical understanding, although some effectiveness rules are based on knowledge derived by induction from practical experience and may prove to be valid even without an understanding of their theoretical basis.

A model of the hypothesized relationships can be depicted as in Figure 1.1. it is the first of many schemata that will be presented in this book in an effort to increase clarity. A schema is a diagrammatic representation of a conceptual model.

1.5 Models

As the term is used here, a model is a mental "picture" or conceptualization of the relationships assumed to exist among a set of phenomena. A phenomenon may be either an entity or an event. The model may be communicated in words or by a figural representation or both. Some people find diagrams helpful complements to narratives, while others are apparently confused by them. Kolling (1976, p. i) has concluded that "ultimately, diagrammatic models are required for any effective analytic treatment of undergraduate curricula" and presumably of those at other levels as well. In any event, the diagram is not the model, but only a visual representation of the model, which in turn is a mental representation of an assumed reality.

A model in the present context is not to be construed as an ideal example toward which to strive. Its purpose is to explain, not exhort. Whether he knows it ir not, every reader has his own model of how educational phenomena relate to each other. The purpose of the explanations and diagrams in this book is not to impose the author's model upon the reader, but to provide him with a basis for re-examining and refining hip own.

The material in this volume represents an elaboration and refinement of a model first published by the author in 1967 and reprinted in several places since then (Short and Marconnit, 1968; Achtenhagen and Meyer, 1971; Zais, 1976). This model (Figure 1.2) emphasized the conceptual separation of the curriculum development and instructional systems, but did not provide for goal setting or instructional planning, or even evaluation. It did define curriculum as intended learning outcomes, identified their source, and distinguished them from the instrumental content of instruction. These features are retained, explained,

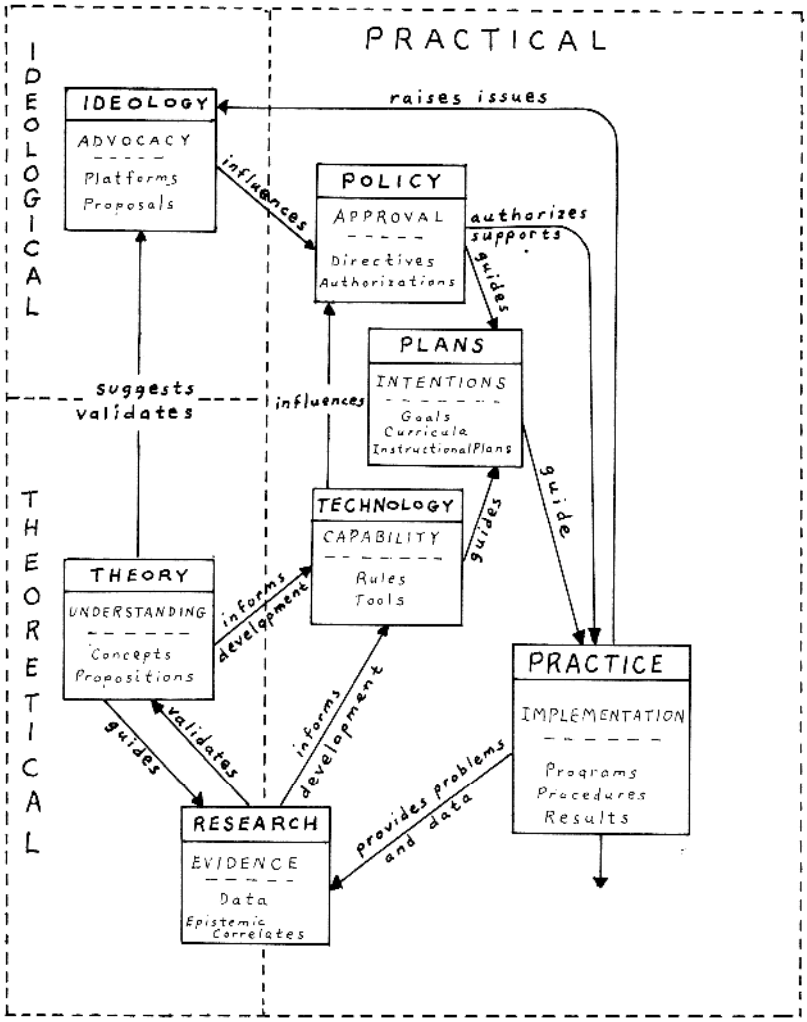


Figure 1.1. Curricular and instructional phenomena exist in three conceptually distinct worlds: theoretical, ideological, and practical.

and amplified in the chapters that follow. The original model was not incorrect, merely incomplete.

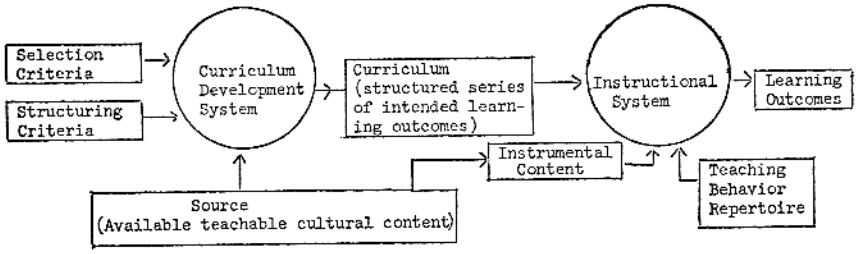


Figure 1.2. Early model of curriculum as output

of one system and input to another (Johnson, 1967).

A model of a concrete thing may, through the use of scale, be a faithful representation of the original, through facsimile, miniaturization, or enlargement. Other models of concrete objects may be stylized and not resemble the original at all, except analogically. Simplification often enhances clarity and permits selective emphasis, with an accompanying risk of distortion and concealment of complexity. Mathematical models making use of vectors, matrices, Venn diagrams, and flow charts have been explored by Kolling (1976) and may prove useful in achieving the necessary fidelity and sophistication which the present treatment lacks.

The schemata in this book depict abstract phenomena, and their scales and configurations have no significance. Several arbitrary conventions are, however, consistently employed. Processes are always shown within circles, and products appear in rectangles. Solid arrows denote that something is a result, whereas dotted arrows show its disposition. Thus, a given item may, as a product of one process, be preceded by a solid

arrow, and as something used in another process, be followed by a dotted arrow. Other symbols will be explained as they appear.

1.6 Educational Processes and Products

Although the distinction between a process and a product is obvious, they are sometimes carelessly confused in discussions about education. "Curriculum" and "instruction" are intimately associated with each other, but the latter is a process, whereas the former is not. A curriculum is a product of some process, though obviously not of instruction. The expression "curriculum process" has meaning only if treated as elliptical, i.e., as short for "curriculum development process.,' (A-"process curriculum" is something else again.)

.. Product" should not be construed here as something tangible. It is merely the observable or inferable result of some process. A curriculum may be recorded in written form, but it need not be. It can remain a strictly mental product. A "learning outcome" can be the result of some process without ever being observed or "measured." Most products in the field of education are abstractions, such as intentions or capabilities.

A "process" is a series of actions tending toward some result. The actions may or may not be observable. Most of the more significant processes in education are covert. Even when overt actions occur during a process, they are assumed either to facilitate or follow an inferred process to which the result or product of interest is attributed. Thus, a learner may engage in observable actions in the course of his learning, but these actions are not considered to be the learning process which yields learning outcomes. The learning process is covert. Similarly, when a decision is made, it may be recorded, but the action of writing it down is not to be confused with the decision-making process itself.

Unintentional actions can lead to results, and hence, a process need not be deliberate. Most processes that are of interest in education, however, involve actions which not only tend toward

some result, but also are directed toward some end, i.e., they are intentional in that they are both deliberate and purposeful. It is often of interest to bring the actions under greater control, i.e., to increase their effectiveness, reliability, or efficiency, thereby "improving" the process.

Furthermore, and perhaps obviously, these actions are carried out by human actors, rather than by some other agents. The processes of concern here, then, consist in series of human actions, which in turn consist in series of acts, all directed at some end or intended product.

Only three main types of products and the processes which yield them will be of concern in this book. These products are: (1) plans, (2) educational outcomes, and (3) evaluative judgments.

1.7 Curriculum Development

The name that is commonly given the technical process of which curriculum is the product is "curriculum development." Other terms, such as "construction," "building," and "making," more clearly indicate that curriculum is man-made than does "development," which inappropriately suggests some kind of natural process of growth, evolution, or unfolding. On the other hand, the other three terms connote a process consisting chiefly in fabricating or assembling something from well-identified components that are readily at hand. This ignores the fact that a major aspect of the process in question entails deciding what components are to be included and what is to be included in the components.

Sometimes the term "curriculum determination" is used. This suggests the decision-making feature, but neglects the organizing aspect. Perhaps the most accurate verb is "planning," for this is what the process in fact is, but since a curriculum is a plan, the expression "curriculum planning" contains a redundancy. For this reason, and also in order to distinguish this planning process from another one, to be called "instructional planning," the expression "curriculum development" will be used here to designate the process by which

curriculum comes into being. It is a process that involves decisions both as to substance and form.

The difference between substance and form is reflected in the seldom observed grammatical distinction between "consists in" and "consists of." Everything is made up of more elemental entities of some sort. When these constituent items are of more than one kind of substance, they can be classified, i.e., assigned membership in various classes. But they can be arranged, as well as classified, and when arranged they form parts of whatever the whole happens to be. One can then say that the whole consists in the constituent items as classes, and this says something about its substance; one can also say that the whole consists of its several component parts, and this says something about its form. Merely identifying all of the parts does not, of course, fully describe form, because the arrangement of the parts, i.e., the relationships among them, is also an important aspect of form. Thus, a curriculum consists in certain classes of elements or items and at the same time consists of certain component parts arranged in some way. Curriculum development is concerned with the determination of both the substance and form of the resulting curriculum.

1.8 Managerial and Technical Processes

It is necessary to distinguish between the technical processes directly concerned with planning, implementing, and evaluating the production function of an educational institution and a set of managerial processes whose purposes are to initiate, regulate, facilitate, coordinate, and improve the technical processes. Some administrative and supervisory processes are carried out in direct support of the technical production function, i.e., instruction. The nature of the managerial support that is necessary or desirable is indicated by the technical plans, and the need for modification of that support is revealed through technical evaluation.

In addition to this direct support of production, there is a managerial responsibility with respect to technical planning and evaluation. Neither of these two technical functions originates

spontaneously or proceeds automatically. Since the emphasis of this book is on the educational planning process called curriculum development and on other technical planning and evaluation processes related to it, particular attention will be given to those managerial processes most concerned with educational planning and evaluation, rather than on those that are more directly supportive of ongoing instruction. At this point, the concern is merely to indicate that there are managerial processes that are to be distinguished from the technical ones which are discussed first.

1.9 Macro and Micro Levels

Since curriculum development can involve decisions regarding either basic curriculum elements (items) or groups of these items arranged in categories, it is also useful to distinguish between micro curriculum development and macro curriculum development. Other related processes, such as goal setting and instructional planning, can similarly be divided into macro and micro levels. Alkin (1973/74, p. 47) has designated two macro levels, two micro levels, and two intervening "modal" levels.

In this book, however, only one micro level is recognized, namely that of the most basic elements that can be identified, elements which cannot meaningfully be further sub-divided. on the other hand, however, a number of macro levels may be identifiable. A whole may comprise a limited number of large categories, each consisting of smaller categories, each in turn made up of still smaller categories, and so on until the elements themselves are reached. Each categorical level is a macro level, and there may be occasions when it is useful to number them, as is done with the hierarchical levels in an outline.

1.10 Product Plans and Process Plans

The product which results from a planning process is, of course, a plan. Plans are of two kinds, however. A model or representation of a product is one kind of plan. Such a product plan might be called a design or blueprint. It gives the specifications for the product's components and

their arrangement (substance and form), anticipating what the product will be like when it finally comes into being. A product plan does not, however, indicate how the intended product is to be brought into being.

The second kind of plan, a process plan, gives directions as to how a particular planned product is to be produced. Instead of showing spatial or functional relationships among parts, it shows temporal relationships among steps (sequence). A process plan is, in effect, an agenda of events, providing information about the procedures, implements, and materials to be used at each step. It is important to note that product planning must precede process planning. one cannot determine how to produce something without knowing what is to be produced.

Process plans can be followed without knowing what the product will be like, but they cannot be formulated without that knowledge. The two kinds of plan are illustrated by the instruction sheet accompanying a disassembled article. The sheet usually includes a picture or diagram of the assembled article (product plan) and a sequence of steps to be followed in assembling it, e.g., "Place tab A in slot B and secure with fastener C…," (process plan). The steps can be followed even when the picture of the final product is missing, but the directions could not have been written without knowledge of what was to be assembled. Even carrying out the process plan is facilitated by awareness of the product plan, however.

The two-way relationship between process and product with respect to planning can be summarized schematically as in Figure 1.3.

ASPECT OF PLANNING	OBJECT PLANNED	
	PRODUCT	PROCESS
PROCESS	1 Planning a product	3 Planning a process
PRODUCT	2 Product plan	4 Process plan

Figure 1.3. Four planning categories represent different aspects and objects.

The planning processes (1,3) precede the planning products, i.e., plans (2,4), but product planning (1) precedes process planning (3). As mentioned earlier, the schemata in this book show processes as circles and products as rectangles. If the initial "P" is permitted to stand for planning, then a planning process of some sort (indefinite) would appear as (P) and a plan as [P]. The relationship between them can be indicated as

(P) ---> [P]

Because boxes and circles, while useful in diagrams, are cumbersome in narrative text, a dual symbol system is used in this book. A capital letter by itself will represent a product. Thus, in a text formula, P is equivalent to [P] in a diagram. A bar over a capital letter, e.g., $\overline{P}$, will be the textual equivalent of (P), standing for the process that results in P. Thus, the symbolic formula

$\overline{P}$ ---> P

means the same as the schematic representation

(P) ---> [P], namely, "the planning process

yields a plan as its product." As these symbols

become familiar, they will be readily comprehended and their use will save many words and cumbersome expressions.

The above formula and diagram do not indicate whether the object of planning is a product or a process. To avoid putting circles within rectangles and vice versa, the textual symbols can be combined with the schematics. In the textual formulas, the use of parentheses will indicate the object of a process or the nature of a product. The two systems of notation are further illustrated in Figure 1.4.

	DIAGRAM SYMBOL	TEXT SYMBOL	MEANING
1	$\bigcirc P(X)$	$\bar{P}(X)$	Process of planning a product, X
2	$\boxed{P(X)}$	$P(X)$	Plan for product X
3	$\bigcirc P(\bar{X})$	$\bar{P}(\bar{X})$	Process of planning the process that will yield X
4	$\boxed{P(\bar{X})}$	$P(\bar{X})$	Plan for process that will yield X

Figure 1.4. Schematic and textual notations representing four planning categories identified in Figure 1.3.

1.11 Rational Processes

The underlying assumption of this book is that the education enterprise is a rational one. This assumption is neither an ideological position nor an empirical fact. It is not argued that

education should be rational, nor is it claimed that current educational practice is rational. All that is asserted is that the statements in this book rest on an assumption of reasoned action. In effect, it is maintained that if education were a rational undertaking, then it would be as described here. Hence, should it be desired that education not be rational, or be held that it cannot be rational, then much of this book will be valueless. Indeed, under either of those circumstances, no understanding of educational phenomena would be possible, and no rules could be developed to guide practice. The only things that could be written pertaining to education would be descriptions of non-rational occurrences in particular situations. These would, of course, have no necessary bearing on any other situations in which other non-rational processes were expected to occur. No advice can be given (or is needed) regarding how to behave non-rationally. One needs only follow impulse without stopping to think.

Rational processes are those for which valid reasons can be offered. A reason is a justification offered for an action, an answer to the question, "Why?" Rational actions must be justifiable in advance; explanations that can only be given retrospectively are rationalizations, not reasons. If no reason can be cited for carrying out a process a particular way, the process is non-rational, e.g., "just because" or "because I wanted to." If an invalid reason is cited, the process is irrational. A reason is invalid if it is contrary to previous experience (empirical) or current understanding (theoretical), e.g., "I tickled the chalkboard because when it is happy, students learn better." Thus, a decision-making process is rational when the criteria used and the rules for applying them are both explicit (or at least capable of being stated) and valid.

The validity of reasons relates to the values that are operative in a given situation, i.e., what is deemed desirable, what is intended. When moral, aesthetic, or intellectual values are applicable, reasons are valid to the extent that they provide justification for decisions and actions with reference to whichever such values are relevant. Similarly, when practical results,

whether economic, educational, or political, are valued, valid reasons relate to effectiveness in achieving intended results. In education, where multiple values always pertain, rationality entails consistency with priorities among those values.

Every action potentially entails both affects and effects, i.e., both intrinsic, consummatory values attendant to, and immediately realized in, the action itself and instrumental values ensuing from the action and subsequently realized in its consequences or results. In any given situation, however, it may be that only one or the other form of value is considered significant. Usually one or the other is dominant. In educative processes both intrinsic and instrumental values pertain, though the latter, reflected in relatively enduring changes in learners rather than in their transient states, are presumably dominant, whereas in sports and recreation, generally, the opposite is the case.

"Reason" and "reasons" are intimately related. The former, an aspect of mental activity, is central to cognitive rationality; the latter, an aspect of practical action, is central to instrumental rationality. Rational action has been defined as ". . . the effective implementation of the values of cognitive rationality in contexts of social interaction" (Parsons and Platt, 1973, p. 69) and is ". . . characterized by conformity with cognitive norms and values wherever such conformity is relevant" (p. 80).

An educational enterprise is a unique action system in that rationality applies to its function as well as its functioning, its products as well as its processes. There is an analogy between the institutionalization of rationality in a social system and the internalization of competence in a personality system (Parsons and Platt, 1973, p. 56), and in the education process both members of the analogy are present simultaneously. Thus, a situation exists in which individuals characterized by cognitive rationality participate in a social action system characterized by instrumental rationality and dedicated to the development of cognitive rationality in other individuals so that they may

achieve instrumental rationality in other action systems.

The five conditions that are necessary for rational behavior are: (1) knowing what consequences are desired, (2) having valid reasons for believing that certain means will achieve these consequences, (3) having the capability of employing those means, (4) having the opportunity to use that capability, and (5) deciding to take advantage of the opportunity. The first two factors imply planning of the product and the production process, respectively. Intention, reflected in planning, is a necessary, though not sufficient, condition for a rational enterprise.

Another inevitable feature of rational undertakings, is evaluation. All human actions, rational or not, are informally evaluated, either by the actor or by others or by both. Similarly, all products resulting from such actions are evaluated. In rational undertakings, evaluation is often systematic and serves definite purposes by indicating whether or not, or how well, the planned means (process) were carried out and whether or not, or to what extent, the desired consequences (planned product) resulted. These judgments provide a basis for modifying the originally planned means or goals, or both, if necessary. Any such decision to revise plans is another instance of planning.

1.12 Purpose and Function

Four "commonplaces" have been identified by Schwab (1964a) as essential elements in the educative process, viz., milieu, teachers, learners, and subject matter. Reference to the dramatistic pentad of Burke (1945) reveals the omission of one factor necessary to account for anything's happening when the four commonplaces are brought together. The pentad comprises scene (milieu), agent (teachers, learners), agency (subject matter), act (process), and purpose. In a deliberate enterprise like formal education, this last factor implies intentionality, the central theme of this book. It is reflected in such terms as "aim" and "function," as well as "purpose."

Although "purpose" and "function" are often used interchangeably and the former, in particular, has many synonyms in the literature of education, their usage here bears some clarification. The terms "aim," "objective," and "goal" mean approximately the same as "purpose," and no distinction will be made among them in this book. All of them suggest intention and imply deliberate efforts to realize it. They represent an anticipated result, consequence, or effect. They are the concern of product planning, and when the process by which they are to be realized has also been designated or planned, these terms are ascribed to, or identified with, that process. Thus, it is legitimate to inquire what the goal or purpose of a process is.

It is also conventional to attribute purpose to the human beings who carry out the actions involved in a process. one can ask what a person's purpose (or goal) is in doing a certain thing. It is uncommon, however, to speak of purpose in connection with non-human things. An object, i.e., a product, as distinguished from a process, is usually said to have a function, or in a particular context, to serve a function. Teleological explanations, ascribing purpose to natural objects, are generally unacceptable from a scientific standpoint.

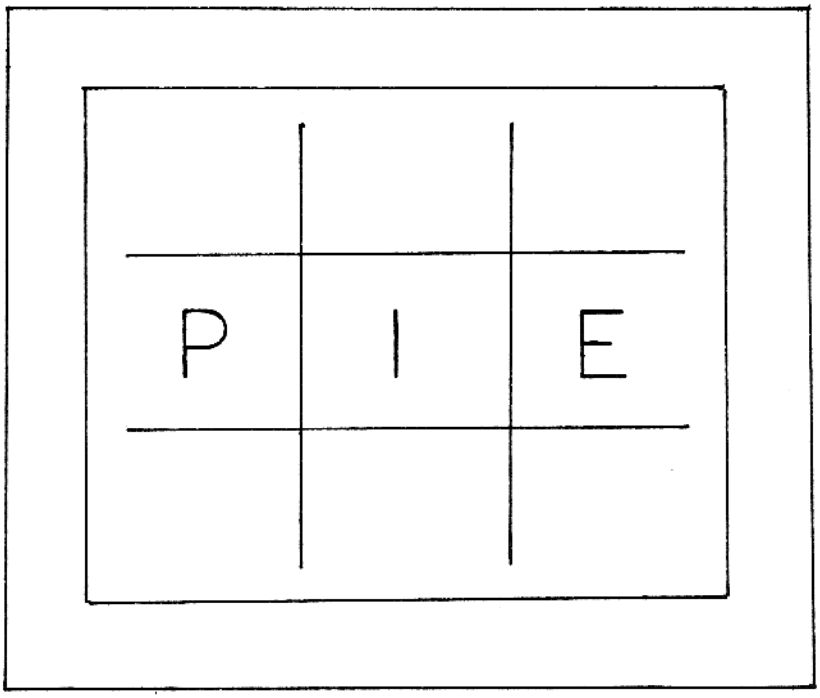
it is possible to speak of both the purposes and the functions of a school, either with or without a distinction between them. As a collectivity of people, a school can have purposes, as can the various deliberate processes they carry out. As an institution, it has (intended) societal functions. In both cases intentionality is implied. But, while intended functions are akin to purposes, intended functions are distinguishable from them. The verbs "serve" and "have" help to indicate the distinction, e.g., a book has the (intended) function of communication, but it may serve the (unintended) function of pressing leaves or holding a door. Similarly, a purpose (intended function) of a school may be to prepare citizens, while it may also serve the function (unintended) of determining eligibility for upward social mobility (Derr, 1973).

Intentionality is central to purpose and to rationality. Planning involves the formulation of

intentions, the anticipation of future consequences, and the management of contingencies among values, means, and ends. Evaluation involves judgments comparing intentions and consequences. Planning and evaluation are, therefore critical elements in a model for a rational educational enterprise.

Chapter 2: The Technical P-I-E Model

2.1 Technical Processes in Education
2.2 Instructional Products
2.3 The Technical Planning Function
2.4 The Technical Evaluation Function
2.5 The Managerial Dimension
2.6 Remaining Chapters



Chapter 2

THE TECHNICAL P-I-E MODEL

2.1 Technical Processes in Education

A distinction has been drawn between technical processes in education and the managerial processes which support them. In a rational model of the enterprise, these technical processes are of three types: planning, implementation, and evaluation (P-I-E).

Both the managerial and the technical processes involve production, but just as the managerial exist only for the benefit of the technical, two of the technical, planning and evaluation, exist only for the benefit of the third, i.e., implementation. In other words, the process called "implementation" is the only one whose products leave the system. Although it is somewhat offensive and sometimes dangerous to use the industrial production metaphor in connection with education (particularly with its connotations of assembly lines and interchangeable parts), nevertheless it is important to recognize that the implementation process called instruction is the only one of a number of related processes which directly brings about or "produces" educational results, the "products" of the system or enterprise. Production processes need not be viewed as mechanical or standardized; they can equally involve the handcrafting of unique items with loving care.

Since there is nothing to implement until there are plans and nothing to evaluate until there is implementation, the three technical functions can be depicted as a linear model. The exceedingly simple schema in Figure 2.1 will be successively elaborated into a complex technical model and later (Chapter 11) expanded two-dimensionally to include the managerial functions.

Obviously, this stylistic block diagram is not a complete representation of a system. It shows no inputs from without and no outputs from

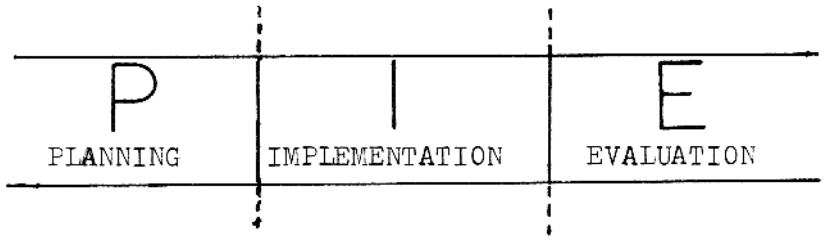


Figure 2.1. Basic linear P-I-E model of rational processes.

the system, nor does it show the products of the evaluation process "feeding back" to the two preceding functions. Numerous refinements will be introduced later, as the three boxes are examined in detail. Nevertheless, the schemata in this volume are not intended to follow all of the conventions of "systems analysis."

2.2 Instructional Products

It is useful to approach the model at the critical technical production function labeled "Implementation," the symbol for which ($\overline{I}$), can, in the education context, coincidentally also stand for "Instruction." In the symbolism developed in Chapter 1, this function can be formulated as $\overline{I} \rightarrow I$, or diagramed as in Figure 2.2.

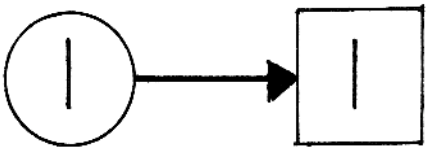


Figure 2.2. Schematic indication that the process of instruction yields some instructional product.

The diagram prompts two questions: What is involved in the instructional process? and What

results from the instructional process, i.e., what is an instructional product? The assumption here is that, whatever form it may take, instruction is a process designed to promote learning. If it is successful, therefore, its immediate product is a "learning outcome." The term "learning" is commonly used in two senses; with the indefinite article to denote an outcome (product), i.e., "something that is learned" and without the indefinite article to denote the process "by which something is learned." This usage can be represented as $\overline{L} \rightarrow L$, where L is any learning outcome and $\overline{L}$ is the learning process to which it is attributed.

The learning process can, of course, occur without instruction. It is inferred to have occurred whenever a learning outcome is detected. Since some learning outcomes are not readily discernible, it is reasonable to conclude that the learning process often occurs undetected. But whenever the process of instruction occurs and a learning outcome is observed, then it must be assumed that the learning process took place. Thus, the instruction process <u>indirectly</u> results in a learning outcome via the learning process, which is inferred. This set of relationships is shown in Figure 2.3.

Figure 2.3. Instruction ($\overline{I}$), when effective, is assumed to induce an intervening learning process ($\overline{L}$), which produces a learning outcome (L).

It seems useful in explaining instruction to distinguish between the learning process, which results in the acquisition of specific, "micro-level" learning outcomes, and another process whereby, under continuing instruction and some degree of maturation on the part of the learner, these specific learnings are compounded

and integrated to produce a substantial transformation of the learner's character and personality. Psychologists commonly refer to this longer-range transformation process as "development," and cite as the principal factors involved in it the learner's physical and mental growth, his maturation, and his cumulative learning. The first two processes, growth and maturation, are largely genetically governed, and to the extent that they are subject to environmental influence, it is largely through factors other than instruction. Moreover, the significance of growth and maturation is greatest in childhood and declines with age, becoming negligible in adulthood and leaving the integration of accumulated learnings as the primary mechanism through which further development proceeds.

Instruction is not essential for either the acquisition or integration of learnings, but whenever instruction is said to occur, these two processes are implicit. Instruction consists in efforts to influence the two processes of learning and development, the first in its immediate, short-term manifestation, the second in its temporal extension. Thus, $\overline{I} \rightsquigarrow \overline{L} + \overline{D}$, in which the wavy arrow means that the instruction process induces, rather than produces, the learning process and the development process.

Indirectly, therefore, I can result in two types of product. The immediate product is a learning outcome, designated "L." The other product is the outcome of the development process and should, for consistency, be designated "D." However, since it is not customary to refer to "a development," and since the product in question is the principal result of the entire education enterprise, it will here be labeled "R," standing for educational result. It represents a significant characteristic of an individual acquired over an extended period of time as a result of receiving instruction. Hence, $\overline{D} \rightarrow R$, and since $\overline{L} \rightarrow L$ and $\overline{I} \rightsquigarrow \overline{L} + \overline{D}$, it follows that $I = L + R$, i.e., the product of instruction consists in, or is equivalent to, learning outcomes and educational results. In schematic form, the technical implementation function, i.e., instruction, can be represented as in Figure 2.4.

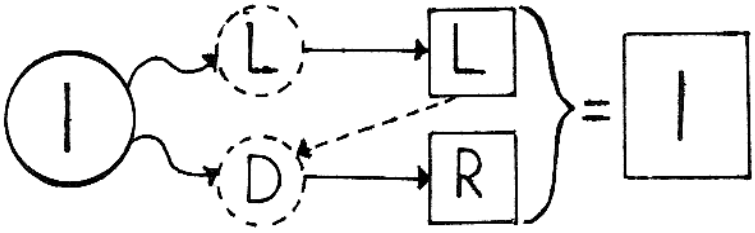


Figure 2.4. The product (I) of instruction ($\overline{I}$) consists in specific learnings (L) and broader educational results (R) brought about by the integration of L through development ($\overline{D}$).

2.3 The Technical Planning Function

The identification of one deliberate process ($\overline{I}$) and two products (L and R) as constituting the implementation function in the P-I-E technical model provides a basis for identifying the components of the planning (P) function in that model. The planning function obviously must comprise three processes: $\overline{P}(R)$, $\overline{P}(L)$, and $\overline{P}(\overline{I})$. Translated, these processes are (1) planning the broad, long-range educational results to be attained, (2) planning the specific learning outcomes to be attained in order to achieve the desired educational results, and (3) planning the means, or instructional process, through which the products planned in (1) and (2) are to be achieved.

The order of these three planning processes is based on two rules: (1) products must be planned before the processes to attain them can be planned and (2) broad long-range products must be planned before the more specific and immediate products constituting them can be planned. Each of the three planning stages can be given more familiar terminology and less cumbersome symbols. Planned educational results are commonly called "educational goals" and can be indicated as "G," instead of P(R). In other words, G = P(R), and therefore, $\overline{G} = \overline{P}(R)$, i.e., the planning of educational results is equivalent to educational goal setting. Obviously, $\overline{G} \rightarrow G$, i.e., goals are the products of the process called goal setting.

At the next stage, the planning of learning

outcomes, $\overline{P}(L)$, can be called curriculum development and simply labeled, "C." Thus, $\overline{C}$ involves deciding what is to be taught, i.e., planning what learniag outcomes are intended to be achieved. Since $\overline{C} \rightarrow C$, curriculum can be defined as consisting in "intended learning outcomes."

Following the two <u>product</u> planning stages, i.e., $\overline{G} \rightarrow G$ and $\overline{C} \rightarrow C$, the <u>process</u> planning can proceed. That is, after the long range educational results have been decided upon and the intended learning outcomes have been identified, then the instructional process can be planned. This planning process, $(P)\overline{I}$, will be called "instructional planning," and labeled $\overline{IP}$, the products of which will be generally designated "instructional plans," IP. Such plans specify what learning experiences are to be provided and how they are to be provided.

Since previous plans are important inputs into subsequent planning processes, the three stages within the technical planning function, i.e., P in the P-I-E model, can be linked as shown in Figure 2.5.

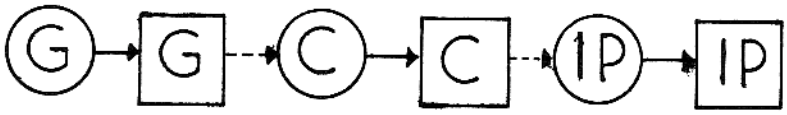


Figure 2.5. Products of previous technical planning processes are important inputs into subsequent ones.

2.4 <u>The Technical Evaluation Function</u>

Like the planning function, technical evaluation is defined by the nature of implementation in the P-I-E model. Upon implementation of plans, it is possible and, indeed, rationally necessary to evaluate the extent to which whatever was planned actually came about. This is not to say that only

what is planned can or should be evaluated. It is valuable to identify and judge unintended actions and results as well. But the minimal concern of evaluation is to ascertain whether the products that were planned were actually achieved and whether the processes that were planned actually occurred.

Since the implementation function (instruction) involves one process ($\overline{I}$) and two products (L and R), technical evaluation has three aspects. Each of the three instructional elements is a potential evaluand. (The term "evaluand" is used here as a convenient substitute for "that which is evaluated.") The evaluative products corresponding to the three evaluands are symbolized as $E(\overline{I})$, E(L), and E(R). However, whereas plans are inputs into subsequent planning processes, the results from the evaluation process for one evaluand are not essential to the other two evaluation processes.

Nevertheless, since intentions constitute an important basis for evaluating actualities, some type of plan is, in effect, an input into each evaluation process. using the double-dashed-arrow operator symbol, below to indicate both this input relationship and the corresponding reflexive orientation of evaluation to plans as sources of evaluative criteria, the following three relationships can be specified:

$$G \dashleftarrow \overline{E}(R) \longrightarrow E(R)$$
$$C \dashleftarrow \overline{E}(L) \longrightarrow E(L)$$
$$IP \dashleftarrow \overline{E}(\overline{I}) \longrightarrow E(\overline{I})$$

These relationships are shown diagrammatically in Figure 2.6.

The entire linear P-I-E model of rational technical processes in education can now be explicated, as in Figure 2.7.

2.5 The Managerial Dimension

if planning and evaluation are requisites for a rational production process, then if these planning and evaluation processes are themselves to be rational, they, too, must be subjected to

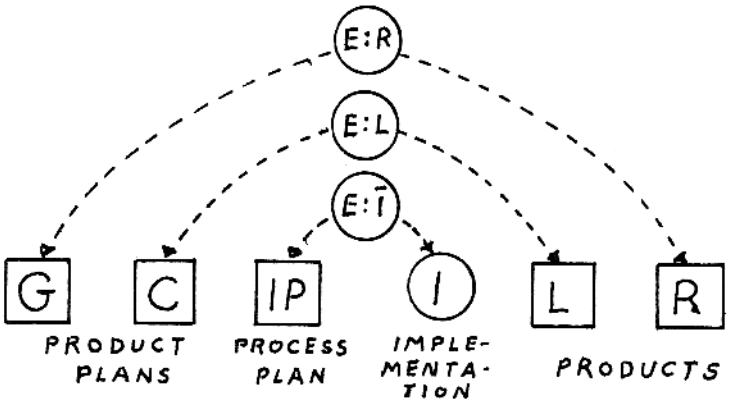


Figure 2.6. Evaluation involves a comparison of implementation and plans. The instruction process and its two kinds of product are foreshadowed by three plans and serve as evaluands for three evaluations.

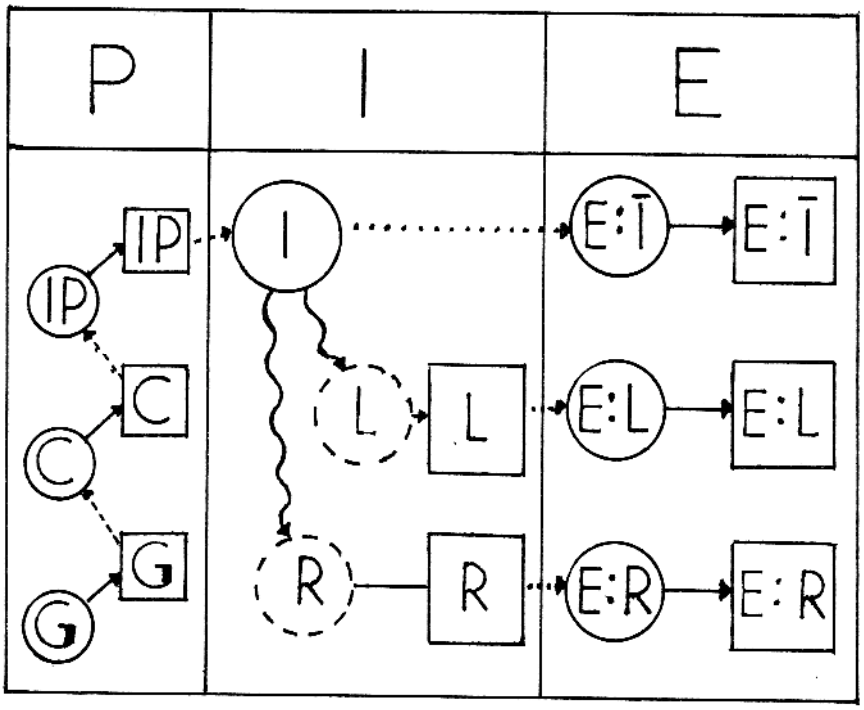


Figure 2.7. The linear technical P-I-E model entails seven processes and eight products.

planning and evaluation. These latter planning and evaluation processes lie outside of the technical process dimension, however. They are managerial functions and cannot be accommodated in a linear model.

By giving the model two dimensions and considering technical planning and evaluation as production processes in themselves, each of them becomes the implementation stage in another P-I-E series. The resulting two-dimensional model will be developed in Chapter 11, to which the reader who is interested only in the outline of the model might wish to turn at this point.

2.6 Remaining Chapters

The technical model having been outlined, the remaining chapters will be devoted to an explication of its details. Primary attention is given to technical planning and especially to curriculum development. Other processes are treated in far less detail. A complete elaboration of the model is provided in the final chapter (14), together with a glossary of terms and a concrete example of each concept. The reader may wish to refer to those examples whenever the symbolic and discursive treatment becomes too abstract to be meaningful.

Figure 2.8 shows the parts of the technical model with which Chapters 3 through 10 deal. The location of Chapters 12 and 13 hints at how the model will be extended in Chapter 11 to account for managerial planning and evaluation.

Three prominent leaders in the field have earlier provided analyses of curriculum and related phenomena against which the present model may be judged for compatibility and completeness. The most widely cited of the three, Tyler's so-called "rationale" (1950), raised four questions to be answered in curriculum development, which Taba (1962) augmented to make eight. The third analysis is less well known, as it is only to be found in an unpublished paper by B. O. Smith (ca. 1967) in which he identified six "dimensions" of curriculum. The comparison in Figure 2.9 reveals substantial concurrence among the four analyses.

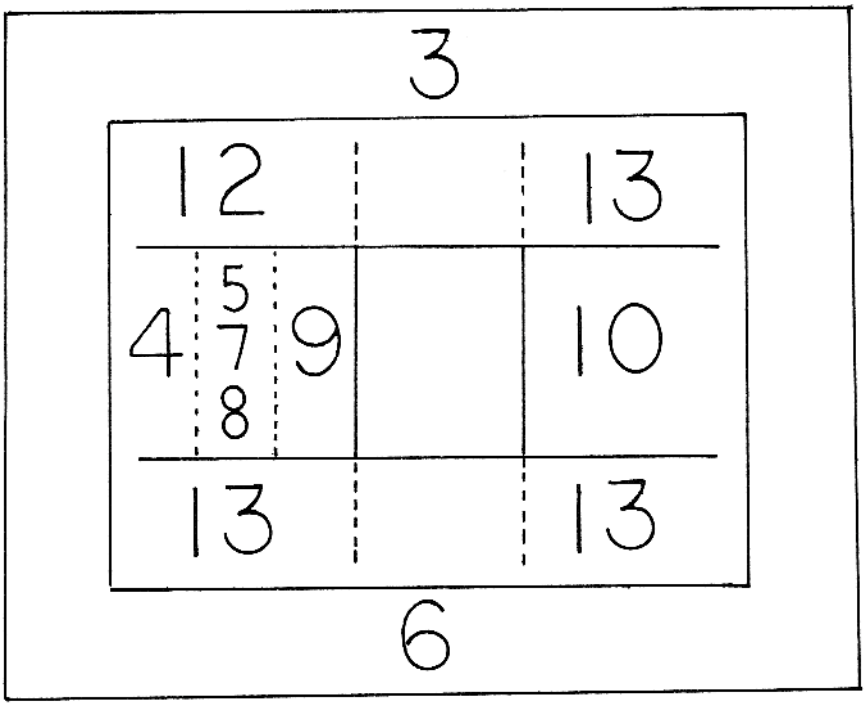
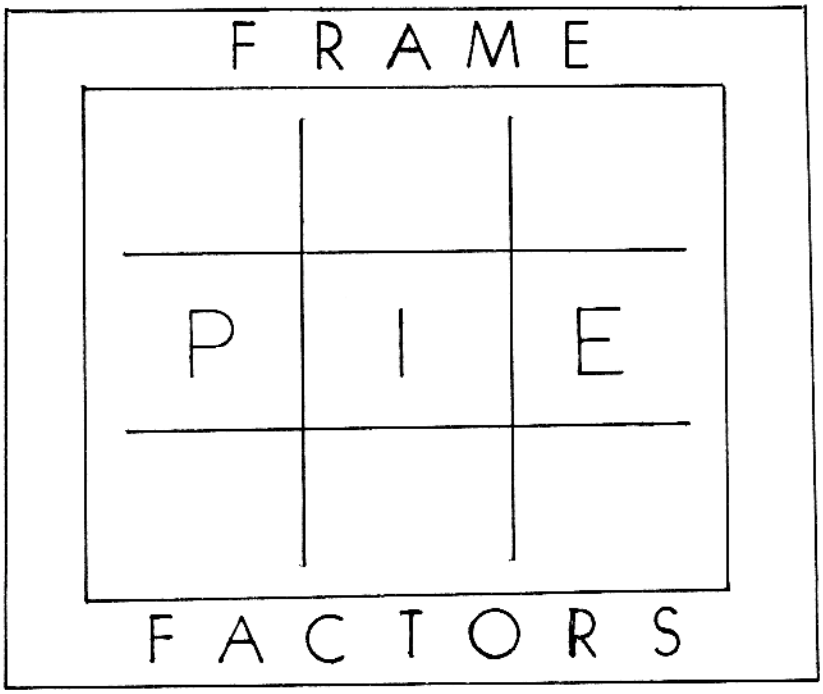


Figure 2.8. Relation of remaining chapters to model, after extension in Chapter 11.

P-I-E	Questions Tyler (1950)	Steps Taba (1962)	Dimensions Smith (ca. 1967)
Goal setting	What educational purposes?	Diagnosing needs	
Curriculum selection		Formulating specific objectives Selecting content	Substantive Criterial
Curriculum structuring		Organizing content Checking balance and sequence	Category Sequential
Instructional planning	What educational experiences? How organize educational experiences?	Selecting learning experiences Organizing learning experiences	Temporal Adaptive
Technical evaluation	How determine whether purposes attained	Determining what and how to evaluate	

Figure 2.9. P-I-E model compared with three earlier analyses of curriculum and curriculum development.

Chapter 3: Frame Factors



Chapter 3

FRAME FACTORS

3.1 Resources and Restrictions

Like all human activities, instruction and its related planning, evaluation, and managerial processes occur in some context. The context comprises natural, cultural, organizational, and personal elements. Each of these elements constitutes both a resource and a restriction with respect to the processes. To the extent that an element exists at all in some amount and of whatever quality, it is a resource; to the extent that its quantity could be greater or less and its quality could be better, these discrepancies can be viewed as restrictions upon the process. Subjectively, any given element can, like the partially filled bottle, be viewed as a resource (half full) or as a restriction (half empty).

Some of the contextual elements actually enter into the processes under consideration as "inputs," whereas others merely serve as boundary conditions. The term "frame factors" is a convenient one for all kinds of contextual conditions (Dahllöf, 1967; Lundgren, 1972). Included among them are decisions made within the system itself, since these authorize or prohibit subsequent decisions (Taba, 1962, p. 382; Alkin, 1973/74, p. 48). These influences tend to operate from left to right in the model and from macro to micro levels, with some exceptions which are explained later.

3.2 Natural Frame Factors

The most basic contextual constraints on instruction are those of time and space. In some respects these factors are immutable, but in other respects they can be manipulated, or ways can be found to compensate for their effects. One cannot increase the number of minutes in twenty-four hours, but one can alter the length of an instructional period, day, week, year, or program. The

geographic location at which instruction must occur may not be subject to change, but the amount and configuration of the space given over to instruction can be changed. moreover, it is possible, within limits, to move the instructional process temporarily, through field trips or by transporting real things or pictures of them to the assigned instructional site. Similarly, the process can sometimes be scheduled at various times of day or night, and the light and darkness of a location can be artificially modified to compensate for the impossibility of re-scheduling.

Alteration of frame factors and compensation for those which are unalterable may require only ingenuity or may necessitate financial expenditure. In the latter instance, the availability or lack of adequate economic resources is in itself an artificial frame factor. Funds can be converted into a variety of resources. Their scarcity imposes restrictions only in the sense that other restricting frame factors cannot be eliminated, mitigated, or circumvented. The availability of money necessitates decisions regarding its conversion into resources, and its scarcity increases the difficulty of the decisions.

3.3 Temporal Frame Factors

Time is the most critical frame factor for the education enterprise. It is never adequate and never free. It can be increased, if at all, only at some economic cost or at the expense of some other function or program aspect. When time remains fixed, however, improving efficiency can have the effect of increasing it.

It is chiefly the finiteness of available instructional time that makes educational planning so crucial. Priorities must be set both with respect to goals and curriculum. Worthy goals must be foregone in favor of worthier ones. Valuable learnings must be given up so that even more valuable ones can be achieved. Instructional procedures and materials must be thoughtfully designed to make the best possible use of the available time. Managerial facilitation through proper scheduling and the furnishing of needed resources contributes to the same end.

Duration is the most significant time element. Teachers apparently adjust their instructional methods in accordance with the available time (Lundgren, 1972). They also de-emphasize, or even omit, curriculum items under pressures of time. one index of the priority given a curriculum item or category is the time assigned to it in a program.

Distribution is another important time element. Where practice is required, it is generally the case that spaced time segments are preferable to massed (Lorge, 1930). Contrariwise, when time consuming preparation, traveling, dismantling, or storing are required, the concentration of instructional time into fewer, longer segments may be advantageous. Time of day and season of year also may be significant frame factors for certain learnings.

Time is a factor in planning, as well as in instruction itself. If time permitted, planning could proceed indefinitely toward ever greater refinement. The limited time available for planning must therefore be allotted wisely and used effectively. Similar limitations and cautions apply to evaluation.

In one aspect of planning, effective temporal organization is an important concern. The sequence of learnings and their temporal placement are two considerations in the utilization of time as a resource. The manipulation of time available for learning is also a major element in the individualization of instruction (Carroll, 1963).

3.4 Physical Frame Factors

The geographic location at which instruction is to take place can affect the kind of instruction that can be planned, the kinds of things that can be taught, and even the educational goals that can be pursued. Often, different locations are associated with different social, political, and economic circumstances, and it is these cultural factors, rather than physical ones, which have the greater influence on educational planning. Even physical differences between urban and rural, or wealthy and poor, areas may be more the result of

man's activities, i.e., cultural, than of natural variations. Still, two U. S. cities, such as Minneapolis in the north and Mobile in the south, differ climatically and in other ways that may influence educational programs and procedures, and the same may be true for Philadelphia on the eastern seaboard and Phoenix in the western desert. Whether educational goals and curriculum, as well as instructional tactics, should be influenced by the natural setting is ideologically controversial, but the fact is that they can be and sometimes are.

Similarly, such factors as amount and type of instructional space, facilities, and other manmade physical arrangements, serve as resources or as restrictions. Given sufficient time and money, they can, of course, be altered, but until this occurs, the presence or absence of an accessible swimming pool, for example, affects whether swimming is taught, and the local flora, fauna, and geological formations affect what learning experiences can be provided during science instruction.

3.5 Cultural Frame Factors

Each society, i.e., organized group of associated human beings, develops and lives in a culture, consisting of the group's values, beliefs, knowledge, and skills and various institutions and artifacts created on the basis thereof. The content and features of the culture in which education takes place constitute another important type of educational frame factor.

Some of the artifacts available in a culture can be used as material instructional resources. They can be directly transmitted from one generation to the next, and new ones can be created. Their availability or absence condition educational planning in a society.

Institutional arrangements are also transmitted directly through established mechanisms based on law, custom, or tradition, though they are subject to modification. obviously, the most significant institutional frame factors are those pertaining to the organizational structure and policy decisions of the educational system. The existence and character of social institutions other than

those engaged in instruction also help define the situational context for educational planning.

The third type of cultural content, which includes values, beliefs, knowledge, skills, and other forms that are transmissible only through learning, is the source of all curriculum content (cf. Chapter 6). As an indispensable resource, this body of learnables is a frame factor of immense significance, and it imposes a limitation in the sense that when is not part of the available, learnable cultural content cannot be included in the curriculum to be taught.

That category of cultural content known as values serves a dual role as a frame factor in curriculum development. Not only are values themselves potential curriculum content but, as an element of the context in which decisions are made, they also strongly influence what educational goals are set, what curriculum content is selected, and what instructional procedures are permitted, preferred, and prohibited.

Another kind of learnable cultural content that can play a dual role in educational planning and operations is composed of knowledge, skills, and attitudes pertaining to the educational planning and operations themselves. Without this resource, whether based on theory, research, tradition, or individual experience, it would be impossible to carry out these processes. What products, if any, result from educational planning depends in part, therefore, on what pedagogical content is available in the culture. In the special case in which a professional education program is to be planned, the body of pedagogical content serves both as a source of the curriculum itself and as a basis for the process of planning such a program.

3.6 Organizational Frame Factors

The entire organizational framework of education in a society is a significant contextual factor. This organization ranges from such features of the immediate instructional setting as class size and group composition to more remote ones, such as school size, the ages included at

various school levels, and departmentalization of staff, and still more remotely, to the overall configuration of compulsory and voluntary educational levels. Decisions at the level of higher education are influenced by the extent and character of elementary and secondary education, and they in turn influence decisions at these lower levels.

Included among organizational factors are the provisions made for pre-service and in-service education of teachers, for educational research and development, and for policy making. Decisions made regarding such frame factors exert an influence on subsequent decisions regarding goals, curriculum, and instruction.

The organizational levels at which decisions are made have been identified as societal, institutional, and instructional (Goodlad and Richter, 1966). Another categorization recognizes six locus levels: national (or state or province), intermediate, local district-wide, school-wide, school component-wide, and classroom (See Figure 3.1).

3.7 Personal Frame Factors

The personal characteristics of the individuals to be taught and of the instructional staff members make each educational setting unique. Some of these characteristics are subject to change, e.g., staff can be retrained or replaced and students can sometimes be selected, but for the most part these human attributes are basic givens in the planning situation. Their effect is minimized by the fact that human beings have much in common and by the standardizing effects of teacher certification and institutionalized teacher education programs.

The influence of personal frame factors is greatest in the planning that occurs closest to the instruction process. The assignment of a particular student to be taught by a particular teacher in the company of certain other students fixes a unique combination of personal attributes which cannot be anticipated or taken into account at more remote planning levels.

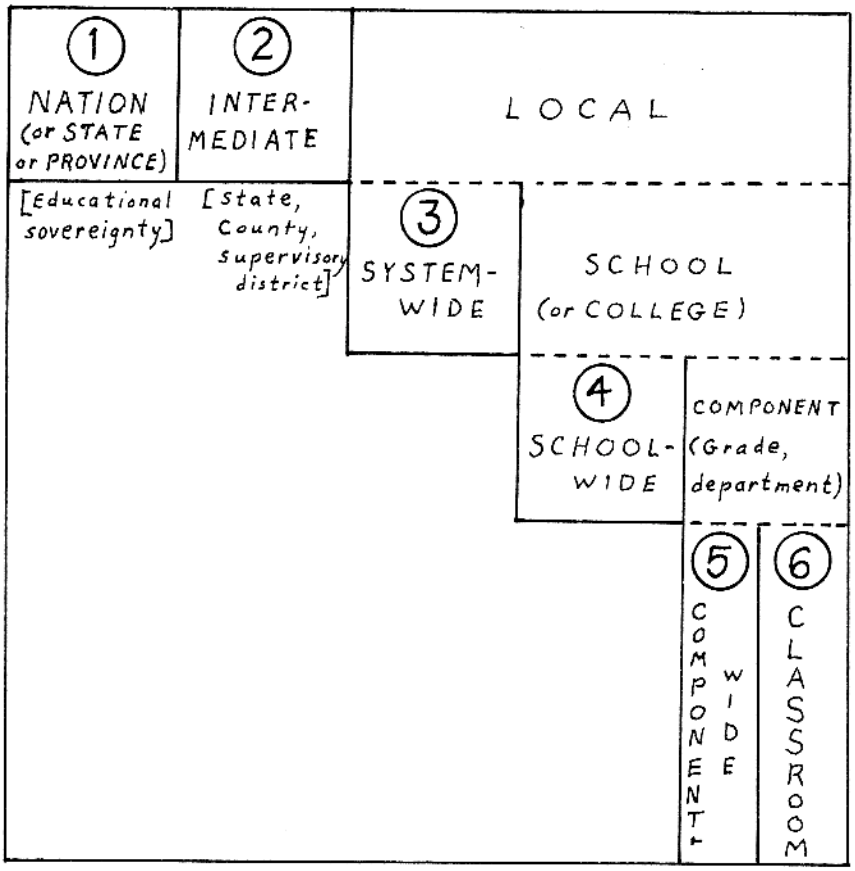


Figure 3.1. Six locus levels at which technical planning and evaluation can occur. Implementation occurs only at Level 6. (From Johnson, 1973)

3.8 Frame Factors in the Model

For each of the several processes included in the model some frame factors are more significant than others. Processes that can occur at different organizational levels are subject to somewhat different frame factors depending upon the level involved. Decisional frame factors have been classified as "higher-order frames" and "proximal frames" (Kallós, 1973). Proximal frames are those which act directly on the instructional process, and these are allocated within boundary

conditions formed by the higher-order frames. This frame-within-a-frame conceptualization is depicted in Figure 3.2, showing the specific categories associated with each.

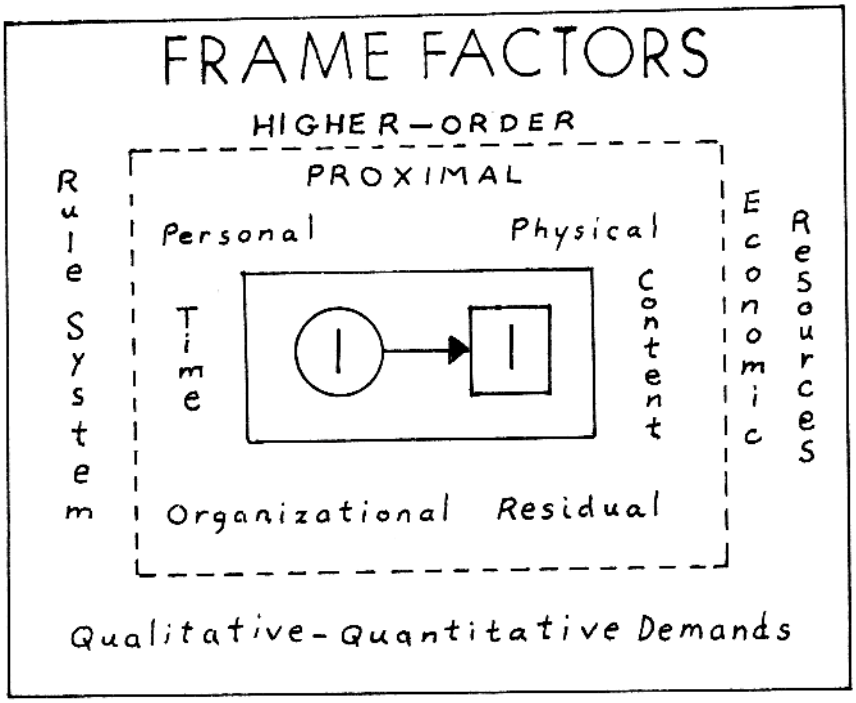


Figure 3.2. The instructional process occurs within a context of proximal and higher-order frame factors. (After Kallós, 1973)

Most of the categories of frame factors in Figure 3.2 have been discussed. "Residual" factors are those, such as students' external experiences and teachers' non-instructional responsibilities, which clearly affect the instructional process but can seldom be taken into account in planning.

The particular classification used is not as important as the recognition that planning does not occur in the abstract, but rather in a specific context defined by a variety of frame factors, some of which are natural and others cultural, some of the latter being extrinsic to the educational

system and others, both organizational and personal, being intrinsic to it. Moreover, each decision that is made can itself be viewed as a frame factor for one or more subsequent decisions. Every frame factor, whether the result of a decision or not, can be classified in any given planning situation as (1) subject to modification at that planning level, (2) modifiable only at another level, subject to influence from the given level, or (3) essentially not subject to modification, except possibly over a long period of time.

The technical P-I-E model (and, later, its managerial extension) is always to be understood as imbedded within a contextual frame, as in Figure 3.3, even when the frame factors are not explicitly shown. In this diagram frame factors are to be construed as both resources and restrictions.

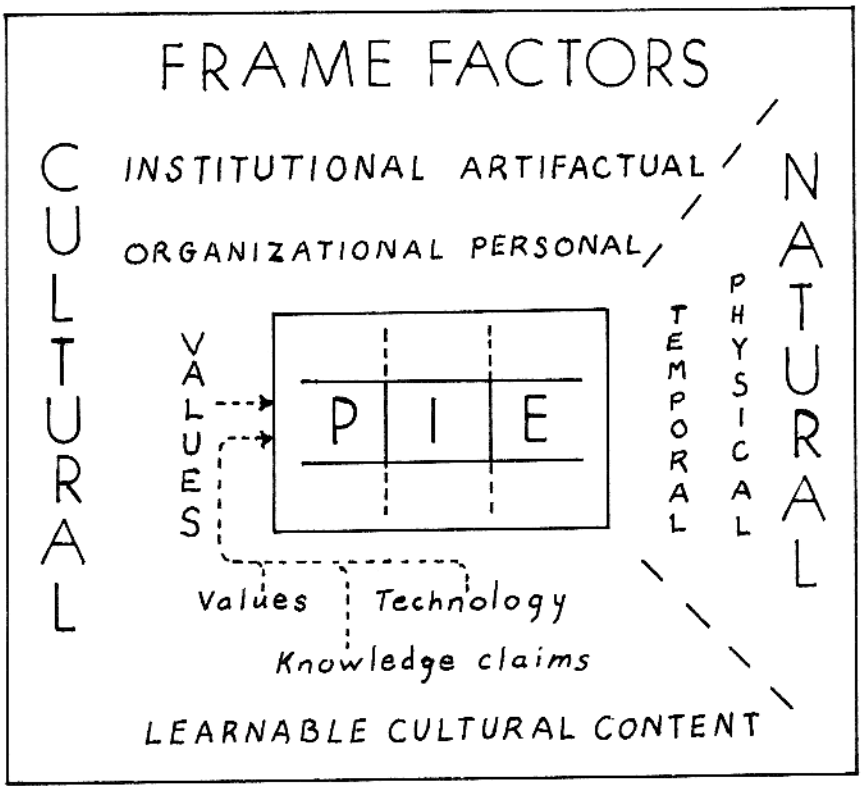


Figure 3.3. Rational processes of P-I-E model and its managerial extension occur in a context of natural and cultural frame factors. Cultural values are shown as serving both as an influence on planning and as potential learning outcomes.

Chapter 4: Educational Goal Setting

4.1 Goals Justify Curriculum
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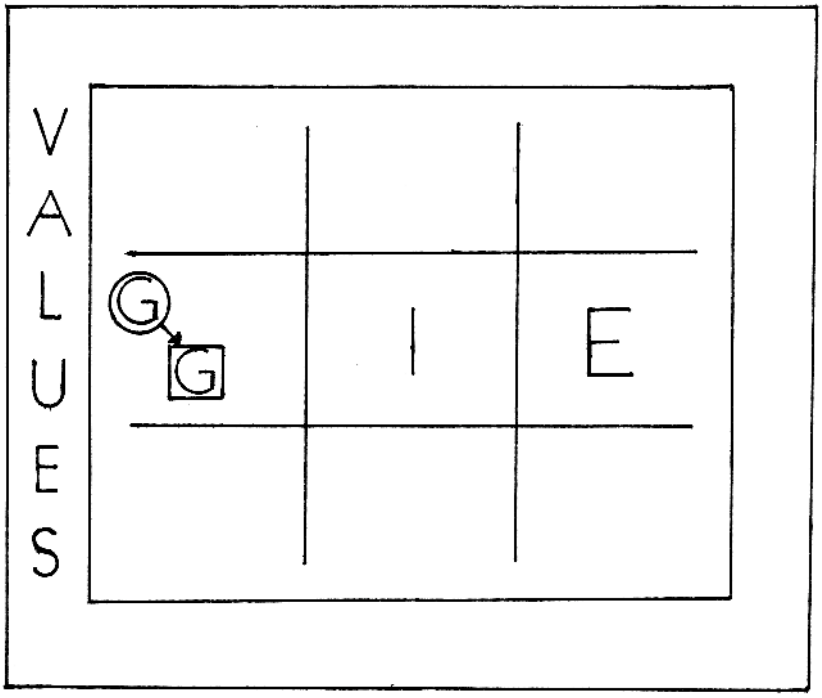


Chapter 4

EDUCATIONAL GOAL SETTING

4.1 Goals Justify Curriculum

A goal is an anticipated result that is desired and not merely expected. Goals exist at various levels, the achievement of some contributing to the achievement of others. Those goals which are expressed in terms of things that can be learned are classified as curriculum. Among other desired, anticipated results classified under the general rubric of "goals," those whose achievement depends on the process of "development" are of particular significance in curriculum development. These "educational goals" are represented by the symbol, "G."

Goals exist in advance of the processes designed to achieve them. Results do not exist until the process has been carried out. Goals (G) are potential, results (R) are actual. Similarly, curriculum (C) is potential with respect to learnings (L), which are actually realized.

Since the broader results, designated "R," are achievable only through the achievement of the learnings, desiqnated "L," efforts to achieve L are justified by the desire to achieve R. This assertion is equivalent to saying that goals (G), i.e., the intention to achieve R, justify curriculum (C), i.e., the intention to produce L. The setting of goals therefore provides a basis for selecting and organizing curriculum. But whether or not curriculum development proceeds on the basis of previously explicated and endorsed goals, one justification for any curriculum decision is that it serves to further one or more educational goals.

4.2 Educational and other Societal Goals for Schools

Educational institutions often assume or accept functions that are not strictly educational.

It is necessary, therefore, to distinguish between goals which are educational and others which are not. Making this distinction does not imply that these other goals are necessarily inappropriate for schools to assume or inferior to educational goals. They are not, however, achieved through learning, and hence are not justifications of curriculum, nor are the consequences they anticipate instructional results.

Institutional goals, other than educational, may strongly influence both curriculum and instruction, however. A school that is expected by society to enforce compulsory education laws must, for example, design curriculum and provide instruction for some captive and unwilling students. If one goal of an educational institution is to protect the mental and physical wellbeing of students while under its care, then in seeking to achieve this goal, even though not done through the learning process, the institution may commit to this goal time and material resources that otherwise might be devoted to instruction. At the same time, the achievement of this goal may enhance the effectiveness of instruction. Similarly, a goal of increasing equality of opportunity in the society may, for example, affect the grouping of students for instruction, which may be favorable or detrimental to that process. As a result of efforts to achieve such other societal goals, learning may well occur on the part of students, but such learning would not be a deliberate outcome of instruction anticipated in curriculum.

Further illustrations of non-educational societal goals sometimes pursued by educational institutions are:

- correcting physical defects of children
- increasing holding power
- equalizing educational opportunity
- compensating for educational deprivation
- meeting needs for trained manpower
- helping students with educational and vocational planning reducing juvenile delinquency and crime
- eliminating racial segregation
- reducing truancy
- providing leisure activities for youth

- providing occupational placement
- improving physical fitness of children
- augmenting community cultural resources
- providing entertainment for a community
- supplementing nutrition of students

4.3 Instrumental Goals

Distinct from both educational and other societal goals of schools is another category of objectives which do not serve as justification of curriculum. These objectives may be important to achieve in order that a given set of educational goals may be achieved but these instrumental objectives are not to be confused with the goals for which the institution exists. Such a goal, for example, as achieving a more democratic classroom climate, may be a worthy one, but it does not indicate an educational result, i.e., what effect such a climate is to have on students.

Any decision to modify a frame factor that requires time to implement gives rise to an instrumental goal toward which efforts are properly directed. Similarly, an instructional plan sets forth numerous instrumental goals which describe conditions to be attained, not results to be achieved. Although experimental projects, in-service training programs, and supervisory strategies may appropriately seek to realize certain instrumental goals, they do not provide a basis for curriculum development.

The following illustrative goals are instrumental rather than educational:

- widening use of technological materials
- improving in-service teacher education
- expanding and modernizing school plants
- providing advanced placement programs
- extending school year
- expanding pre-kindergarten programs
- enlarging summer programs
- articulating better among educational levels
- increasing efficiency of school operation
- individualizing instruction
- attracting higher quality teachers
- promoting team teaching

4.4 Values Justify Educational Goals

A value is "a cultural object which, through internalization, can become a characteristic of an individual or, through institutionalization, of a group" (Parsons and Platt, 1973, p. 38). Cultural values serve as a basis for justifying educational goals in much the same way that the latter justify curriculum. This relationship was indicated in Figure 3.3 by the position (to the left of goal setting) assigned to "values" as a frame factor. Values are relatively stable contextual features that shift only slightly over long periods of time. They are subject to clarification by educational planners, but not to determination by them.

Values represent conceptions of states of affairs that are considered desirable by some individual or group. They are the referents (i.e., objects) of an individual's positive attitudes. The referent conditions, whether concrete or abstract, are objective; that they are valued is a subjective matter.

Those values which are widely shared among the members of a social group are cultural values. In a relatively small, homogeneous, stable society or community, the dominant cultural values are likely to be more clearly identifiable than in a large, heterogeneous one that is undergoing rapid social change. Although the latter situation is characterized by less consensus and greater difficulty in arriving at priorities, even so, considerable agreement usually exists on what the most important things in life are.

Just as individuals' actions are often at variance with (and speak louder than) their words, so the "operative" values of a group usually differ from those "conceptualized" within it (Zais, 1976). Consensus is likely to be most readily achieved on the values embodied in the basic documents of a group, even though they may frequently be contradicted in practice. Apparent contradictions may be generally acknowledged, or they may be denied by some when the interpretation of the value is controversial, e.g., disagreement as to whether specific policies or practices do or do not accord with universally accepted values, such as freedom'.

equality, and justice. In other instances, the interpretations may be in complete accord, but the value itself disputed, e.g., success, thrift, self-sufficiency.

In any event, since it is never the case that conceptualized values fall short of operative ones and always a matter of regret when the opposite is true, there would appear to be no reason to justify educational goals on any but conceptualized values, thus rendering any discrepancy irrelevant. Conceptualizations shift, however. The prevailing value pattern in American society, characterized as "instrumental activism," is, for example, said to be shifting toward an "institutionalized individualism," in which social achievement is valued less for its collective effectiveness than as for its associational emphasis (Parsons and Platt, 1973, p. 42).

Since attitudes are vectorial, having magnitude as well as direction, their referents (values) can be arranged hierarchically. When two or more values enter into conflict in a particular situation, their relative priorities help determine which prevails., But, further, the hierarchy of values provides a framework in which a value can be justified on the basis of its contributing to a higher value. This implies the existence for each individual and social group of an ultimately "highest" value which needs no justification.

Values may be viewed as instrumental or as intrinsic, the latter being states of affairs regarded as desirable in and of themselves, the former being so regarded for their efficacy in realizing other values. Thus, some things are considered to be good <u>for</u> something and others as simply being good, without reference to any utility. This distinction is reflected in the hierarchical arrangement, but does not imply a priority of either instrumental or intrinsic values over the other. While the "highest" value must be intrinsic, certain values instrumental to a high value may have priority over others that are classified as intrinsic. Educational goals can themselves be viewed as instrumental values of a sort.

4.5 Justification and Actualization

Cultural values justify educational goals, which justify curriculum, which in turn justifies instructional plans, which justify the process of instruction itself. This series could have begun with higher values justifying values of lower priority and ended with broad instructional strategies justifying particular instructional tactics or procedures. The series can be viewed in two directions. Justification proceeds from right to left in response to the question, Why? Moving through the series from left to right one is called upon to answer the question, How? The concern in this direction is not justification, but actualization, through translation or implementation.

The questions, why? and How?, obviously require a referent, which is identified in response to the interrogatory, What? In any particular context the referent is always an "end," something sought to be done or effected. That which justifies any given "end" can be termed a "reason," and that which implements it is a "means." Therefore, what is in one context a means can in another be an end and in still another, a reason. Thus, reasons, ends, and means are relative terms. (See Figure 4.1.) Moreover, while they can be distinguished conceptually, they cannot be divorced from each other in practice.

When the focus of attention is "educational goals," the associated reason is "values," and "curriculum" is the means by which they are reached. When the focus is on "curriculum" the reason furnishing justification is "educational goals," and the means of actualization is an "instructional plan." This pattern is extended further in Figure 4.2.

4.6 Macro Goals

The distinction between "micro" and "macro" has been explained as denoting specific items in the former instance and categories of those items in the latter. Categories or classes can themselves contain sub-categories and be included in supra-categories. Numerous macro levels are therefore possible with respect to goals, curriculum, and instructional plans.

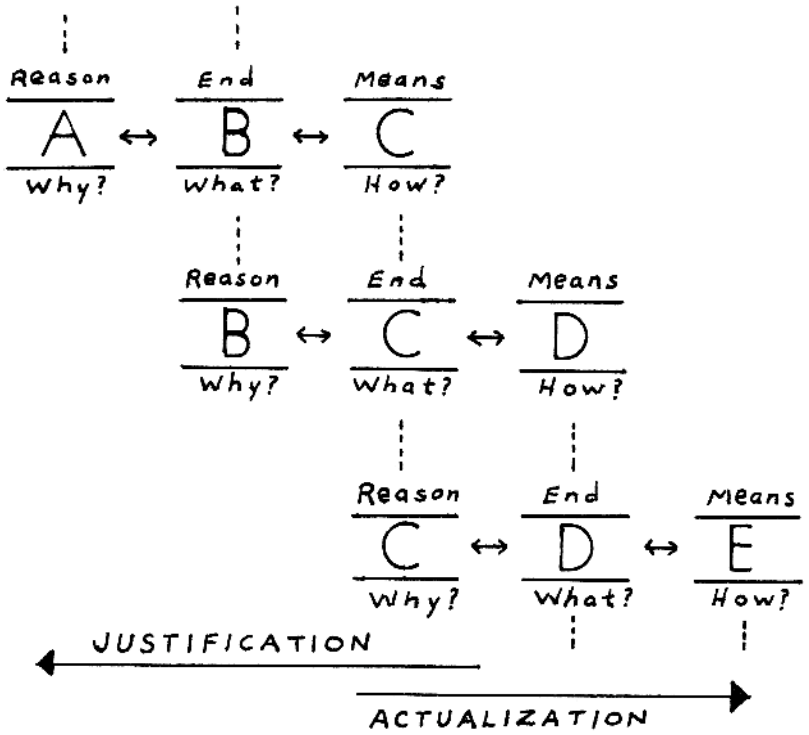


Figure 4.1. Reasons, Ends, and Means are relative concepts, representing "values" at different levels. whatever is viewed as an "End" can be justified by a "Reason" and actualized by a "Means," which, at another level, can be viewed as an "End."

At the highest, most general level, educational goals conventionally comprise four categories: (1) personal development (individuality), (2) socialization (citizenship), (3) economic productivity (vocation), and (4) further learning (more advanced education, more specialized training, and life-long, independent learning). These four categories are obviously not unrelated. The distinctions are arbitrary, but the resulting abstractions are useful for designating broad educational purposes.

The individual's own development, variously called "self-realization" (Educational Policies Commission, 1938), "self-cultivation" (Broudy, 1961), "self-actualization" (Maslow, 1959), "self-emergence" (Goldberg, 1971), "self-sufficiency" (Scheffler, 1973), or, sometimes, "self-fulfillment," would appear, within the democratic context at least, to be preeminent. Socialization imposes limits on that development but presumably serves ultimately to enhance the opportunities of all members of a society to achieve their potentials and aspirations. Likewise, economic productivity is both essential to the social order and contributory to an individual's efforts to attain the good life as he or she defines it. Further learning not only

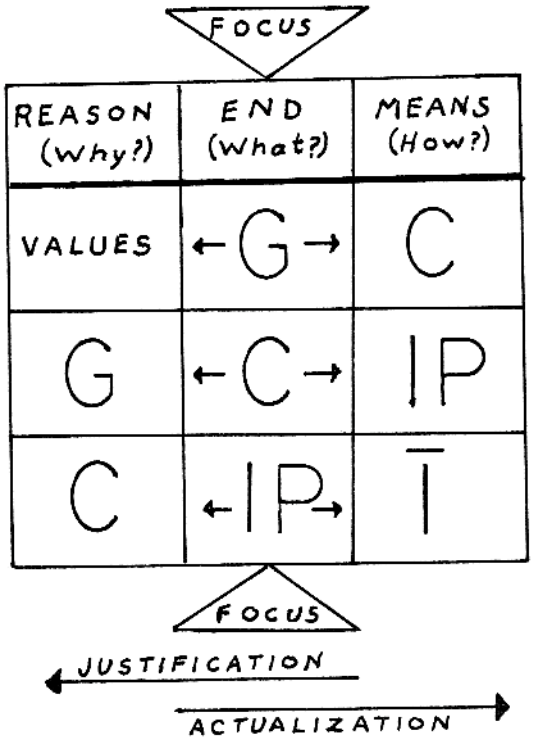


Figure 4.2. Depending upon focus, curriculum can be viewed as means, end, or reason.

promotes the other three goals, but is itself an important aspect of continuing personal development. The relationship among the four macro goals may be visualized as in Figure 4.3.

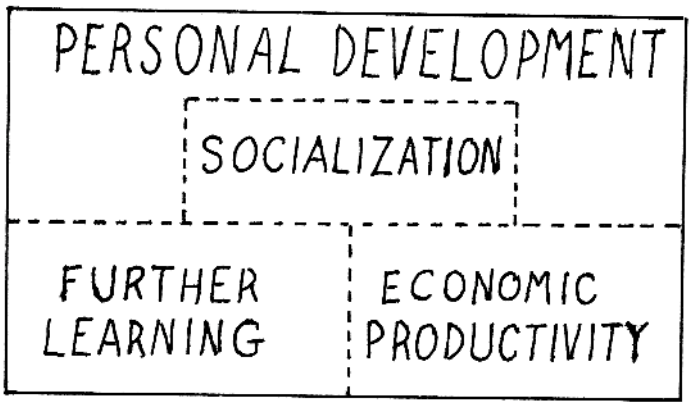


Figure 4.3. Of four macro goal categories, "personal development" is intrinsically valuable, and "socialization," "economic productivity," and "further learning" are instrumental to it and to each other.

A given educational program or institution can take on, or be assigned, responsibility for all four of these macro goals, or only one, two, or three of them. When two or more are involved, they may (perhaps inevitably) have different priorities. An elementary school, for example, may assign relatively low priority to "economic productivity," whereas for a technical institute this macro goal category may be the highest priority or sole responsibility. A lower secondary school may regard socialization or citizenship education as a more important concern than a liberal arts college does. Still, even continuing education programs for adults who are beyond the formal education years may serve all four macro goals, retraining workers or up-grading their vocational qualifications, equipping citizens to serve more effectively as

civic leaders or become better informed on social issues, helping individuals to pursue interests to greater depths or discover new talents, and enhancing their potential for still further learning.

This scheme of classifying macro goals is based on roles in which educational acquisitions are to be used or applied. It assumes that each individual has a role as a member of society, an economically productive role, a private, personal avocational role, and a learning role. Cultural values define the ideal person, group member, worker, and learner, and thereby suggest the educational results (R) that are desired and are to be anticipated in the educational goals (G).

Various well-known goal formulations use somewhat differing terminology and recognize different numbers of categories. For example, the Educational Policies Commission (1938) included "self-realization" and "economic efficiency," omitted further learning, and split the socialization category into "human relations" and "civic competency." Similarly, the Progressive Education Association (Thayer, et al, 1939) reorganized "personal living" and "economic relationships" and divided "social relationships" into "immediate" and "wider."

Of the seven objectives of secondary education proposed in the "cardinal principles" report (National Education Association, 1918), one pertained to the further learning macro goal (command of fundamental processes), two were personal development goals (health, worthy use of leisure), three were socialization goals (citizenship, worthy home membership, moral character), and one expressed economic productivity (vocation).

The "cardinal" objectives were derived from priorities set by Spencer (1869) as to what knowledge is of most worth. Neglecting further learning, he answered the question of worth in terms of the goals for which the knowledge was to he acquired, as follows (grouped by macro goal, numbered according to Spencer's priorities):

Personal development

1. self-preservation

3. bearing and rearing children

5. enjoying refinements of culture

Socialization

4. participating in social and political life

Economic productivity

2. earning a living

Sometimes all of the categories relate to some aspect of personal development, i.e., intellectual (or mental), physical, emotional, spiritual, moral, civic, vocational. King and Brownell (1965) refer to various "claims" on education generally and on curriculum particularly: intellectual, political, social, religious, occupational. These forms of expression recognize that it is only the individual who learns, develops, and assumes various roles, and that at the micro level, therefore, educational goals must refer to characteristics to be developed by an individual.

4.7 Societal and Individual Educational Goals

It is obvious that both the individual who receives instruction and the society which sanctions, or even requires and somehow supports, his receiving it have a stake in the process, in the goals it serves, and in the results it achieves. Accordingly, educational goals are sometimes classed as societal and individual, presumably referring either to their origin or their object. In reality, the individual learner is the only object of any educational goal, because only individuals can learn -- a society per se cannot be educated. Moreover, the origin of all educational goals is the society or some segment of it -individuals may select programs with certain goals, but individual learners do not set the goals of educational institutions, however much they may collectively influence them and individually be given curricular and instructional options.

When educational goals are classified as societal and individual, it is on the basis of who is the chief beneficiary of their being achieved. The preparation of citizens and other socialization processes are primarily of benefit to the society. Equipping learners for continuing self-cultivation and for coping with life's demands is principally for the individual's benefit. Economic productivity is equally of importance to the society, which needs trained manpower, and to the individual, who needs a career. Further learning also benefits both. This view of macro goals is illustrated in Figure 4.4.

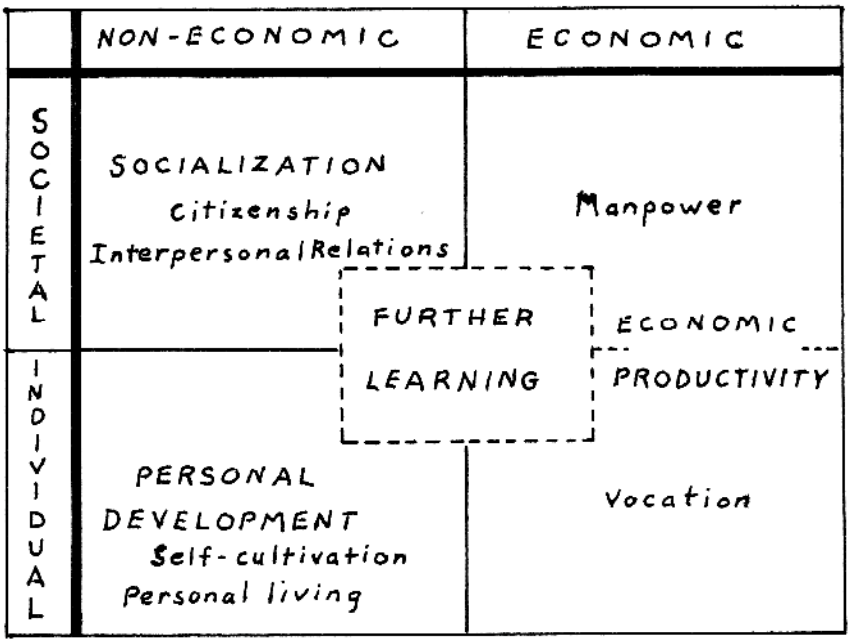


Figure 4.4. Macro goals can be classified as economic or non-economic and as primarily of societal or individual benefit.

4.8 Needs and Demands

The term "need" is a vague slogan word with multiple meanings that is often used in association

with curriculum and educational goals (Thayer et al., 1939). All curricula are designed to help students meet their needs, defined and identified in one way or another (Komisar, 1961). But a "need" can be viewed (1) prescriptively as a condition which is determined on the basis of logic or empirical evidence to be (a) lacking and to be (b) indispensable for some (c) purpose that is (d) obligatory to fulfill, or (2) motivationally as a condition that, being claimed or inferred to be desired or required, explains the specific behavior of an individual or his characteristic disposition to behave.

Thus, an individual can be declared to have a need which he neither recognizes nor takes any action to satisfy. Moreover, he can attribute his own actions to a certain need which he claims to feel, while others may explain his actions by postulating a completely different need that may be specific to the given situation, or recurrent, or persistent. Since educational institutions and instructional programs cannot meet all of the needs expressed by, or imputed to, individuals, it is essential in setting goals and developing curriculum to decide which ones are to be met. If these are limited to the needs which arise out of the requirements set by the institution or program itself, the problem remains of deciding what those requirements are to be. It is absurd to imply that the goals of an educational program are to meet all the needs of students, unhelpful to assert that they are to meet certain unspecified needs, and fatuous to maintain that they are to meet whatever needs the program itself creates.

"Demands" is another term frequently associated with educational goals. Demands embrace various requirements, expectations, and preferences imposed by society, or some segment of it, upon those who receive, or give, instruction. Demands are both qualitative, with respect to the characteristics sought in the educational products, and quantitative, with respect to the numbers with those characteristics that are sought. The two most obvious sources of demands that may impinge on educational goals are employers and higher educational levels (Dahllöf, 1963). However, total societies, local communities, and other institutional

constituencies also have expectations and preferences, as well as some requirements set for various kinds of certification, e.g., for voting, driving automobiles, practicing professions and trades.

Students' interests and preferences, as expressed in enrollments and surveys, often determine, or at least influence, curricular offerings and sometimes even educational goals. These choices are sometimes classified as consumer "demands," though more often perhaps, as the expressed "needs" of learners. In the 1960's, groups of students at some educational levels formalized these expressions of desire and called them "demands," often characterized as "non-negotiable." when educational goals are in fact changed in response to such "demands," the sponsoring societal group is in effect setting an additional goal of "achieving any educational results requested by either a sufficient number of students or any number of students with sufficient power." A rational model provides for consideration of students' opinions in the goal-setting process, but makes no provision for the setting of goals in response to the illegitimate power of student groups or any other special interest minorities, except within rules established by the duly established decision-making bodies. Moreover, groups which undertake to subvert institutionalized ("establishment") procedures also reject rationality.

A distinction exists between demands imposed upon those being instructed and those imposed on the institution providing the instruction. The former type of "demand" can be said to generate a corresponding "need" on the part of some or all students (see Figure 4.5). A decision to set goals which recognize needs so derived is quite different from a decision to set goals in response to demands made upon the institution itself. Expressed or inferred, needs and demands call attention to the possible desirability of adopting certain educational goals, but any decision as to whether or not a goal is to be adopted is, in a rational model, done with due regard for the values involved.

4.9 Micro Goals

Educational goals, within any of the four macro-categories, are statements describing

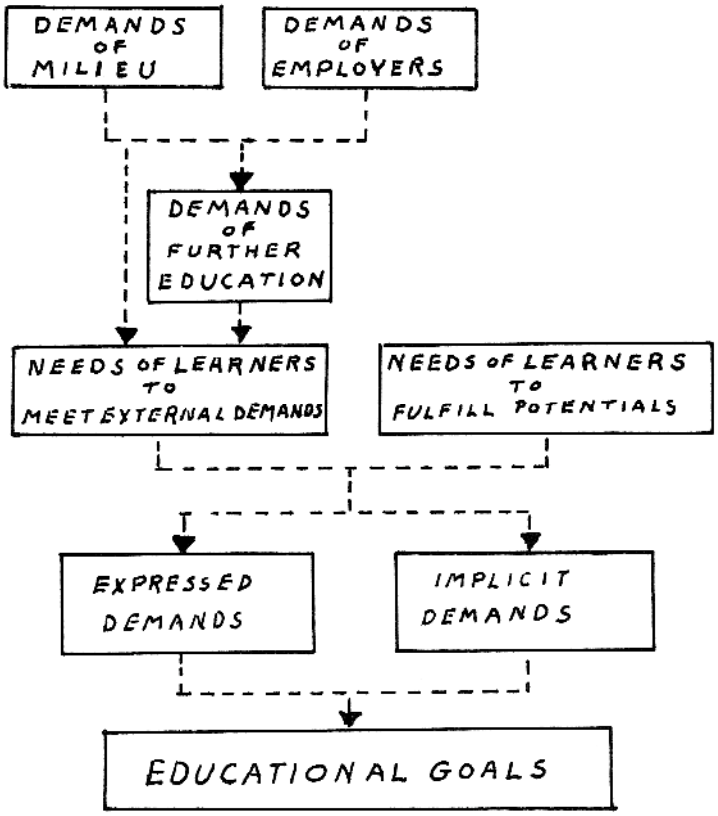


Figure 4.5. Various "demands" and "needs" serve as sources of educational goals.

qualities of the educated or trained individual that he is expected to develop as a result of instruction. A statement can be recognized as an educational goal by (1) its reference to individual characteristics that can reasonably be attributed to learning and development and by its having been (2) adopted by legitimate authority and (3) accepted for implementation by those in a position to plan and carry out instruction. Statements of purpose or intention relating to the education enterprise that do not refer to desired student characteristics are not educational goals. Statements referring to such characteristics are not

goals if they cannot be developed through learning, if efforts to achieve them have not been sanctioned, or if there is no intention to achieve them.

Goals are in effect descriptions of the "educated person," the "good citizen," the effective practitioner of a particular occupation, or the independent learner. They are not expressed as characteristics of the good society, or as such primary sociological functions of schools as transmitting the cultural heritage, supporting the discovery of new knowledge, and allocating individuals to positions in society, or as such secondary functions as providing custodial care for children, serving as a setting for courtship, maintaining sub-group traditions, and promoting social reform (Goslin, 1965).

Neither are goals expressed in terms of categories of learning outcomes, e.g., to teach science, or history, or first aid. These are macro curricular identifications; the goals of an institution cannot be to teach whatever it teaches, but must indicate the desired results of teaching those things.

Goals are also not assertions about what those who have been instructed will do, i.e., they do not predict "behavior." The behavior of an individual is a manifestation of a unique response to a situation. Such a response depends at least on (1) the actual circumstances in the situation (opportunity), (2) how these circumstances are perceived by the individual (judgment), (3) his capabilities to respond, and (4) his predispositions to respond in particular directions (attitudes). The two latter elements which help determine behavior are products of learning, but behavior itself is not, notwithstanding that changed behavior or performance is the only form of evidence that learning or development has occurred. A man's footprint cannot be mistaken for the man himself, and behavior, as evidence of learning, must not be mistaken for learning itself. Defining learning as a change in behavior is not useful. Educational goals refer to characteristics to be acquired through learning and development, not behaviors to be exhibited. This point is not only technically

and logically important, but morally significant as well in any society that values individuals' freedom and responsibility for their behavior.

4.10 Goals Relating to Personal Development

It is almost a contradiction to specify the characteristics desired in a person equipped for self-realization, since the latter implies the individual's freedom to become the kind of person he wishes to become. In fact, of course, no one is entirely free to become anything he wishes, as society imposes some limits. moreover, without setting a narrow stereotype, every society has its preferences regarding the characteristics of its members. In the earlier stages of childhood, at least, individuals are both shaped according to societal ideals and taught what alternatives exist from among which they can adopt their own ideals. one possible educational goal, therefore, is the, attribute of possessing an evolving "telic image," i.e., ideal self (Goldberg, 1972). Another goal that has been proposed is a commitment on the part of the individual to self-cultivation toward the realization of his telic image, i.e., to becoming the best kind of person he can conceive. (Broudy, 1961). This goal of "self-perfection" can never, of course, be fully achieved since every step toward it creates awareness of new possibilities that were previously unrecognized.

Interpretations of self-cultivation vary along dimensions of breadth and depth. Breadth has reference to the number and variety of interests, depth to the extent of accomplishment and knowledge within a particular area of interest. In Figure 4.6 breadth is depicted as ranging from an emphasis on a few selected talents and interests at one extreme to a notion of "well-roundedness" at the other. Views regarding depth are shown as varying in the relative emphasis placed on excellence of achievement and enjoyment of participation. These emphases are, of course, not mutually exclusive, nor are they unrelated to the breadth dimension in that, except for the rare "Renaissance man," it is seldom possible for an individual to achieve excellence in all, or even most, fields of interest. Nevertheless, three general directions of individual development are indicated as

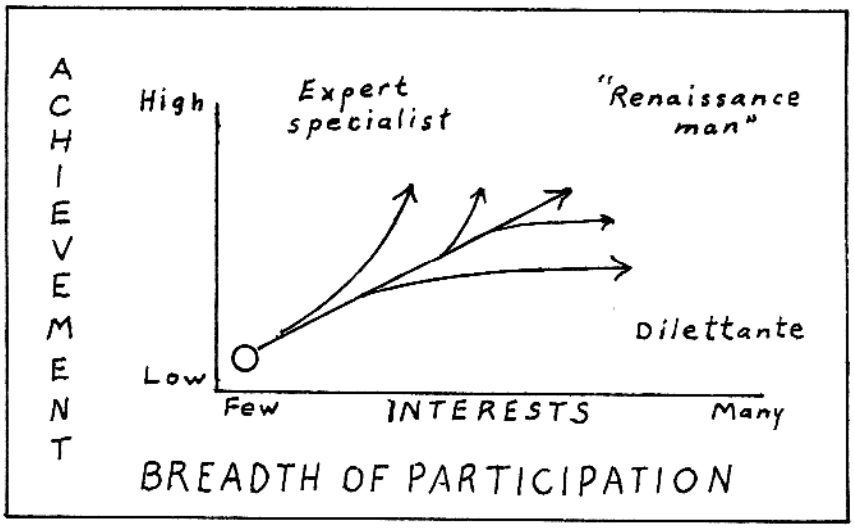


Figure 4.6. Views of "personal development" vary with respect to breadth and depth of interests to be cultivated.

available options, the one between the two extremes leading to what might be called a "versatile competence." Such "self-sufficiency," according to Scheffler (1973), entails responsibility for personal and moral decisions and the capacity to carry them out, which in turn imply intellectual power reflected in logical, linguistic, and critical proficiency.

Another commonly emphasized aspect of personal development is effective personal living, i.e., coping with the vicissitudes, demands, and problems of "everyday" life. In a complex, rapidly changing, technologically advanced culture, dealing adequately with these concerns requires far more learning than in a simple, relatively stable culture. In the latter, most of the necessary learning can be done informally, but in advanced societies it is often controversial as to which, if any, of these learnings should be included in the curricula of formal educational institutions and which should be left to informal educative agencies, such as the family, peer group, church, clubs, and communications media, to transmit (or to the

individual to acquire independently). A major difference in viewpoint exists also between those who stress goals relating to preparation for adult living and those with greater concern for helping children and adolescents learn how to deal with their current personal problems.

Though personal in orientation, many of the skills of living are characterized by societal preferences and sanctions and are, therefore, more appropriately classified under the macro goal of "socialization." one widely known list of "persistent life situations" (Stratemeyer et al., 1947) can be divided as follows:

Personal Development

- Health
  - Satisfying physiological needs
  - Satisfying emotional and social needs
  - Avoiding and caring for illness and injury
- Intellectual Power
  - Making ideas clear
  - Understanding ideas of others
  - Dealing with quantitative relationships
  - Using effective methods of work
- Aesthetic Expression and Appreciation
  - Finding sources of aesthetic satisfaction in oneself
  - Achieving aesthetic satisfactions through the environment
- Natural Phenomena
  - Dealing with physical phenomena
  - Dealing with plant, animal, and insect life
  - Using physical and chemical forces
- Technological Resources
  - Using technological resources
  - Contributing to technological advance

Socialization

- Person-to-Person Relationships
  - Establishing effective social relations with others
  - Establishing effective working relations with others

- Group membership
  - Deciding when to join a group
  - Participating as a group member
  - Taking leadership responsibilities
- Intergroup Relationships
  - Working with racial and religious groups
  - Working with socio-economic groups
  - Dealing with groups organized for specific action
- Economic-Social-Political Structures and Forces
  - Earning a living
  - Securing goods and services
  - Providing for social welfare
  - Molding public opinion
  - Participating in local and national government

4.11 Goals Relating to Socialization

The macro goal of socialization comprises preparation for citizenship and those aspects of "upbringing" in which the society has definite expectations. Each society defines the rights and responsibilities of citizenship, as well as its ideal of a citizen. In addition, however, it expects the transmission of mores, conventions, folkways, and moral codes as bases for group living. The socialization macro category contains those educational goals that relate to individual characteristics which contribute to "rational, autonomous, and responsible participation" in various social sub-systems (Parsons and Platt, 1973, p. 118).

Citizenship is obviously defined differently under different forms of government and prevailing political philosophies. Even within a democratic state, however, conceptions of the "good citizen" range from the minimal role of obeying the law and voting to a highly activist role of asserting one's own rights, helping others assert theirs, and vigorously campaigning for reforms in the social and political order. Views regarding citizenship tend to be reflections of personal ideologies, so that a good citizen exhibits radical, liberal, conservative, or reactionary traits, depending on the political coloration of the group doing the defining. Qualities associated with "patriotism" range from

unquestioning chauvinism and obsession with symbols to hypercritical impatience with any discrepancy between national ideals and achievements.

many formulations of citizenship micro goals envision adults who are well informed, concerned, and capable of independent thought. "Informed" implies awareness of ideals and values; of historical successes and failures to achieve them; of current problems, issues, and trends; of factual, conceptual, and ideological bases for competing social policy solutions; and of the historical and contemporary international context. "Concerned" implies a sense of responsibility for having considered, defensible opinions; for expressing them effectively; and for acting on one's convictions, individually and collectively, in the most effective ethical and legal manner. "Independent thought" implies the ability to "assess statements correctly" (Ennis, 1962), to identify assumptions, to draw valid conclusions, to recognize biases, to judge authorities, and to consider the interests, not only of self, but of the majority, of minorities, and of future generations. Figure 4.7 depicts interpretations of citizenship varying along dimensions of breadth and depth of concern. Breadth refers to the range of problems and issues that are of interest, and depth pertains to the degree of commitment and involvement in solving or resolving them. Three possible directions of citizenship development are indicated as options in setting micro goals.

Aside from the civic-political aspect, socialization goals may refer to characteristics preferred by a society in children and adults in their roles as family members, neighbors, friends, and fellow pedestrians, passengers, audience members, and the like. While there is not unanimity within a society or community either as to the appropriateness of existing norms for interpersonal and public behavior or the importance of adhering to them, societies differ from each other with respect to what behavior is acceptable in various situations and what personal temperament is preferred. Because socio-economic classes within a society have different standards and practices with respect to these matters of upbringing, it is difficult to secure agreement on educational micro goals in this area.

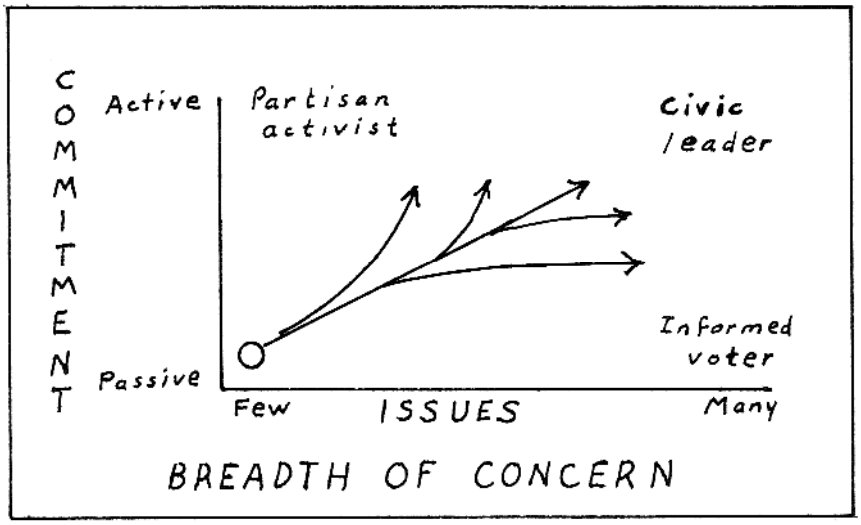


Figure 4.7. views of "socialization" for citizenships vary with respect to breadth and depth of involvement to be fostered.

4.12 Goals Relating to Economic Productivity

Whether based on societal manpower requirements or on individuals' needs for economic self-sufficiency, micro goals under this rubric may refer either to results of training for a specific occupational role or of education in vocational matters generally. In either case, goals describe the effective producer, worker, or employee, with or without reference to a given occupation.

The statement of goals for vocational training programs is simple, since the only decisions required are what occupations are to be included and what characteristics are associated with successful performance in each. Certain goals for vocational education programs are often indistinguishable from some of those set forth for personal development and socialization. Some of the same qualities considered desirable in a self-actualizing individual and in a responsible group member are also valued in his role as an economic producer. In some respects, however, conflicts may exist among the macro goal categories. For self

realization it may be important to be able to make decisions and pursue one's own interests, whereas the ideal worker in many occupations may be the one who carries out the assignments of others and follows directions precisely. Similarly, a society may prefer group members who are cooperative and considerate, whereas certain occupations may require competitiveness, aggressiveness, and obduracy. Possibly the overriding qualities are discrimination and adaptation with respect to situational appropriateness.

Opinions are sharply divided regarding the purposes, importance, and timing of vocational education. In the United States, it is the aspect of education for which the federal government has provided the greatest support. Important laws relating to vocational education were enacted by Congress in 1862 (land-grant colleges), 1917 (secondary agriculture, home economics, trade, and industrial), 1936 (distributive education), 1958 (scientific and linguistic specialists for national defense), and 1963 (widened vocational training and manpower development). The U. S. Office of Education has twice promoted a vocational emphasis in American schools, once in the late 1940's under the "life-adjustment" slogan (based on a list of "imperative needs of youth" which originated with the American Vocational Association and set "saleable skills" first in priority) and again in the 1970's under the watchword, "career education." Proponents who have succeeded in getting these laws passed and programs launched base their case on dangers to national security, shortages of trained manpower, and excessive youth unemployment. Opponents decry the unbalancing of educational programs due to the lack of comparable support for liberal studies, the overemphasis on the economic motive for education, and the wastefulness of pre-mature vocational choice and training.

Competing views on occupational preparation are portrayed in Figure 4.8 as differing with respect to emphasis and timing. Emphasis ranges from relative unconcern about vocational choice and planning to single-minded pre-occupation with employment or preparation therefore. Timing refers to the earliness of job entry. Early entry precludes lengthy preparation, but delayed entry does not

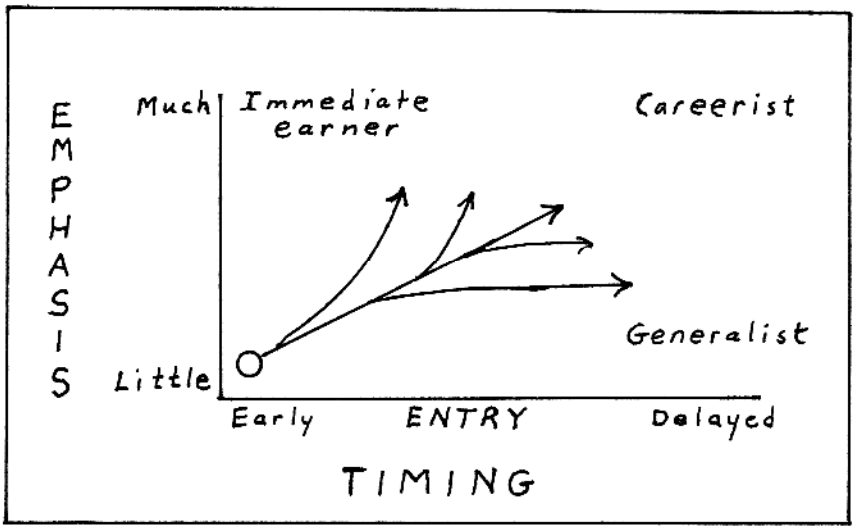


Figure 4.8. Views of "economic productivity" vary with respect to timing of, and emphasis on, specific vocational preparation.

necessarily imply long preparation. Three available directions, therefore, are: 1) early job market entry on the basis of fortuitous choice and with little or no training, in order more quickly to obtain resources for the immediate gratification of needs unrelated to economic productivity, 2) employment delayed as long as possible, in order more fully to participate in education for its self-cultivation values, and 3) delayed entry with extended education and training aimed primarily at higher levels of economic success.

4.13 Goals Relating to Further Learning

The position that "knowledge for its own sake" is the only legitimate goal of education obviously disallows the three macro goals discussed above and hence leaves no basis for deciding what knowledge is of most worth. Thus, it furnishes no guidance for curriculum selection. Promoting certain learnings because they promote and facilitate further learning is not, however, the same as providing knowledge for the sake of knowledge. The inclination and capacity to continue learning are

individual characteristics which can be developed through appropriate learnings and, hence, represent legitimate potential educational goals.

The "further" learning can range from the next lesson to subsequent stages of formal schooling to self-directed life-long learning or continuing education. Implicit in the theme is attention to motivation for continuing to learn, to prerequisites for achieving specific learning outcomes, and to learning "how to learn," i.e., study. Justifying the learning of one thing on the basis of becoming more likely or better able to learn another thing cannot be extended indefinitely to each succeeding learning. Eventually, a learning is reached, the justification for which falls into one of the three "external" macro goal categories.

4.14 Education and Training

Consideration of "educational" goals, and especially those related to economic productivity, necessitates a distinction between education and training. Whenever a micro goal specifies or implies the setting, situation, or circumstances in which the qualities sought in the learner are likely to be applicable, it is a training goal. Whenever there is no such specification or implication, the process of attaining the goal is one of education, rather than training. The difference is one of specificity of applicability, not one of importance or prestige.

To the extent that situations can be anticipated in which any given individual is certain, or highly likely, to be required, or given the opportunity, to function in childhood or as an adult, training also plays some part under the macro goal of personal development. Similarly, highly predictable occasions for civic action and social interaction give rise to some training goals as part of socialization. In eras of rapid social and technological change, prediction is hazardous. Moreover, change is facilitated by educated people, whereas training can foster self-fulfilling prophecies by perpetuating the situations for which people are trained. Ideologically, a high value attached to freedom of choice in personal life-style and in improving the social order favors qualities

associated more with extended education than with early training.

Nevertheless, many cultural advances have been possible only because of the expertness developed under a high degree of specialization. A highly complex technology and economy clearly cannot be sustained without such specialization and the intensive vocational training associated with it. Paradoxically, however, the qualities developed through highly specialized training are achievable only with persons who possess other qualities associated with education, thereby making early training impossible in many instances. Moreover, even when possible, early vocational training may be deemed unwise in view of the obsolescence of occupations and the unreliability of early vocational choices, either of which may make re-training necessary. Training is a supplement to education, not a substitute for it. If, however, training without an adequate educational base is often either impossible or considered undesirable, it is also the case that education without subsequent training is inadequate for many requirements. In any event, although "G" was said to represent educational goals, it is meant to include goals of "training" as well as of "education."

4.15 The Goal-setting Process

The process of formulating and assigning priorities to a set of educational goals requires attention to the language in which they are stated, the values they are to promote, and the mission of the institution or program through which they are to be achieved. More than any of the other educational planning processes discussed in this book, goal-setting appropriately involves lay persons, although professionals can usually offer valuable technical advice, particularly with respect to wording and feasibility. The identification of the values to be promoted and the assignment of priorities are often the prerogatives of lay people. Often goals are set at the highest levels, such as state, province, or nation. They may be arrived at by an official group, such as the New York State Board of Regents (see Figure 4.9) or by a special citizens committee for subsequent adoption by an official body, as in Pennsylvania (see Figure 4.10).

1 Goal: **Mastery of the basic skills of communication and reasoning essential to live a full and productive life**

School:
a. Communication skills (e.g., reading, writing, speaking, listening, and viewing)
b. Computational operation, (e.g.. mathematical conceptualization, problem-solving, data collection)
c. The logical process of thinking creatively, critically, and constructively in problem solving, planning, evaluation, analysis, research, etc.

2 Goal: **Ability to sustain lifetime learning in order to adapt to the new demands, opportunities, and values of a changing world**

School:
a. Knowledge of contemporary society
b. Knowledge of alternative futures
c. Learning skills
d. Personal planning skills
e. Problem defining and solving skills

3 Goal: **Ability to maintain one's mental, physical, and emotional health**

Schools:
a. Knowledge of good health habits and the conditions necessary for physical and emotional well-being
b. Knowledge of the physical and health problems caused by drug addiction and other personally harmful activities
c. Knowledge of sound community health practices
d. Understanding body processes and functions
e. Development of physical fitness
f. Knowledge of safety principles and practices

4 Goal: **Understanding of human relations -respect for and ability to relate to other people in our own and other nations - including those of different sex, origins, cultures, and aspirations**

School:
a. Respect for and knowledge of other social, cultural, and ethnic groups
b. Understanding one's relationship to his natural, economic, and social environment
c. Respect for the community of man
d. Understanding of home and family relationship and involvement in the home, community and society in general

5 Goal: **Competence in the processes of developing values particularly the formation of spiritual, ethical, religious, and moral values which are essential to individual dignity and a humane civilization**

School:
a. Knowledge of the diversity of values
b. Skill in making value-based choices
c. Commitment to one's own values and acceptance of diversity of values in society

6 Goal: **Knowledge Of the humanities, social sciences, and natural sciences at a level required to participate in an ever more complex world**

School:
a. Knowledge of the basic methods of inquiry in each field
b. Interdisciplinary efforts to focus knowledge on problems.

7 Goal: **Occupational competence necessary to secure employment commensurate with ability and aspiration and to perform work in a manner that is gratifying to the individual and to those served**

School:
a. Developing work skills and habits
b. Developing awareness of work opportunities
c. Occupation selection
d. Occupational training and retraining

8 Goal: **Knowledge and appreciation of our culture and capacity for creativity, recreation, and self-renewal**

School:
a. Knowledge of major art, musical, literary and drama forms
b. Appreciation of the diversity of mankind's historic and cultural heritage
c. Appreciation of beauty
d. Development of individual creative talents
e. Wise use of leisure time
f. Promotion of increased use of and appreciation for community resources (museums, historic sites, performing arts groups, etc.) that reflect our cultural heritage and achievements

9 Goal: **Understanding of the processes of effective citizenship in order to participate in and contribute to the government of our society**

School:
a. Knowledge about political, economic, and legal systems with an emphasis on democratic institutions and on the global interdependence of these systems
b. Knowledge of the American political process at national, State, and local levels
c. Knowledge about taxation and fiscal policy
d. Acquisition of citizenship skills:
   1. Decision making
   2. Group participation
   3. Leadership and "followership"

10 Goal: **Knowledge of the environment and the relationship between one's own acts and the quality of the environment**

School:
a. Awareness of one's relationship to the environment
b. Preservation and wise use of resources
c. Understanding the effects on the environment of man's activities and values - lifestyles, technology, population growth, energy utilization, etc.

Figure 4.9. New York's 40 goals for elementary, secondary, and continuing education are classified into ten macro goals. (From: N.Y.S. Board of Regents, 1973)

I. Quality education should help every child acquire the greatest possible understanding of himself and an appreciation of his worthiness as a member of society.

II. Quality education should help every child acquire understanding and appreciation of persons belonging to social, cultural and ethnic groups different from his own.

III. Quality education should help every child acquire to the fullest extent possible for him, mastery of the basic skills in the use of words and numbers.

IV. Quality education should help every child acquire a positive attitude toward the learning process.

V. Quality education should help every child acquire the habits and attitudes associated with responsible citizenship.

VI. Quality education should help every child acquire good health habits and an understanding of the conditions necessary for the maintaining of physical and emotional well-being.

VII. Quality education should give every child opportunity and encouragement to be creative in one or more fields of endeavor.

VIII. Quality education should help every child understand the opportunities open to him for preparing himself for a productive life and should enable him to take full advantage of these opportunities.

IX. Quality education should help every child to understand and appreciate as much as he can of human achievement in the natural sciences, the social sciences, the humanities and the arts.

X. Quality education should help every child to prepare for a world of rapid change and unforeseeable demands in which continuing education throughout his adult life should be a normal expectation.

Figure 4.10. Nine of Pennsylvania's ten goals of quality education, adopted in 1965, are comparable to those in the New York list. (From: PA Board of Education, 1973)

The extent of similarity of such lists is shown in Figure 4.11. Often the values underlying listed goals are not made explicit, but when they are it is usually in the form of a manifesto labeled a "philosophy of education."

At the most general macro goal level, the applicable categories are derived from the "mission" for which an institution or program was established. The mission of a vocational institution is usually very specific, that of elementary and secondary schools and liberal arts colleges is usually broader, but predominantly educational in nature, and that of a university is still broader and includes the generation and application of knowledge, as well as its transmission. Missions, and hence macro goals, may be prescribed in charters and legal definitions and, therefore, not be subject to deliberation.

The specification of sub-categories and micro goals, however, does require discussion. It is not essential that these be arranged under the relevant macro goals, but it may serve the interests of orderliness and completeness to consider one macro category at a time. Consistency of language and level of specificity are promoted by keeping in mind that educational goals are "intended educational results" or "intended developmental outcomes." As was stated earlier, many purported lists of educational goals are curious mixtures contaminated with societal goals which are not achievable through the educative process and instrumental goals which describe that process or the circumstances in which it is to occur.

A set of goal statements that is complete and expressed in consistent and appropriate language still may not provide sufficient guidance for curriculum development if there is no indication of the relative importance attached to each. If, in fact, all are not considered of equal importance, some method of assigning priorities must be devised. The simplest and crudest method is to designate one sub-set as "primary" and the remainder as "subsidiary" (nominal). Finer distinctions can be made by arranging all of the goals in rank-order of importance (ordinal), and still greater refinement can be achieved by assigning

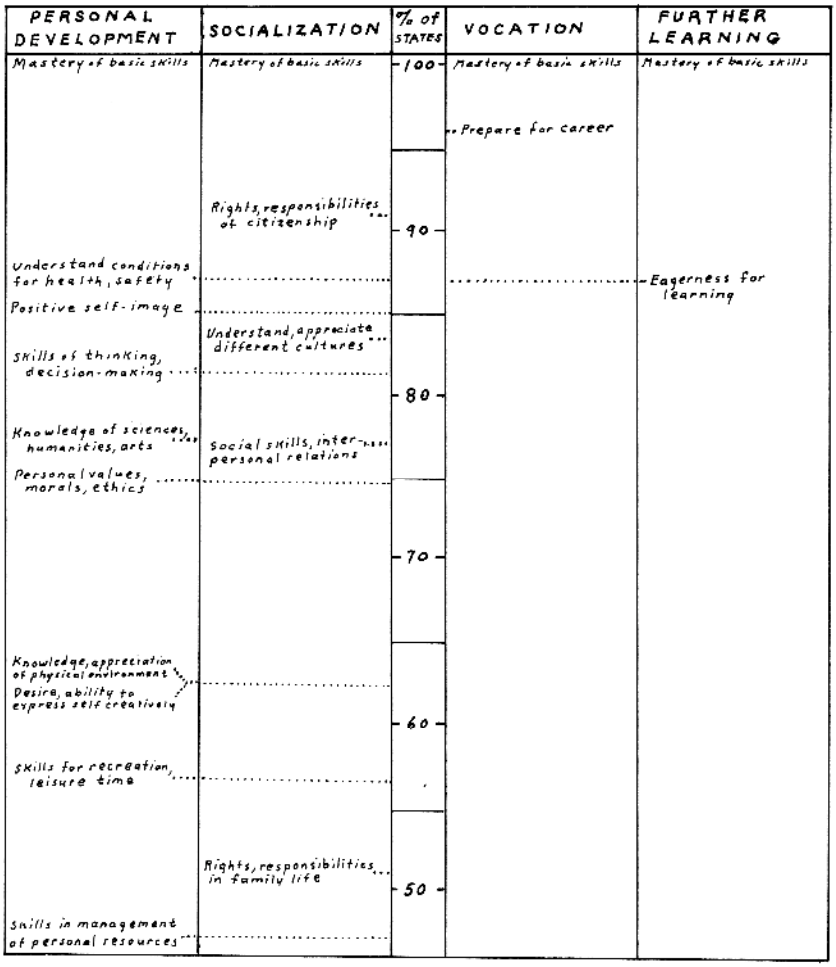


Figure 4.11. Fifteen goals have been endorsed by at least half of the states in the U. S. and eleven by three-quarters of them. (After Flanagan and Russ-Eft, 1975)

each a rating value on some scale, e.g., 1-7 or 1-10 (interval).

If the consensus of a group is sought, it can be arrived at through discussion and voting, or individually assigned priorities can be pooled and averaged. A variant of the latter known as the Delphi technique proceeds through several stages, at each of which individuals are given the group results for the previous round and permitted to adjust their priority assignments, if they are so inclined.

With short lists, i.e., 10-12 goals, ranking is feasible, and it is even possible to employ the more precise method of paired comparisons, in which each goal is compared in importance with each of the others. The number of such comparisons for ten goals is 45, but for twelve the number increases to 66 and for fifteen it exceeds one hundred. Long lists demand that each goal be rated separately on a scale or that the goals be grouped into categories, such that both the categories and the goals included under each can be ranked. Experience indicates that all of the various methods produce fairly similar results, arguing for use of the simplest one. Even crude indices of priority are more informative than no indication at all of the relative importance of goals.

4.16 Program and Course Goals

When micro goals are expressed in terms of the characteristics ultimately to be possessed by learners, it is clearly not feasible for any one institution at any one level, or any one program or course in any one year, to assume responsibility for all of them in their totality. Only partial progress toward a given goal is expected to be made in any given setting, and various programs and courses have the potentiality of contributing to some goals but not others. In any given context, therefore, appropriate micro goals must not only be selected but further specified as to the assumed entry status and intended exit status of students with respect to each.

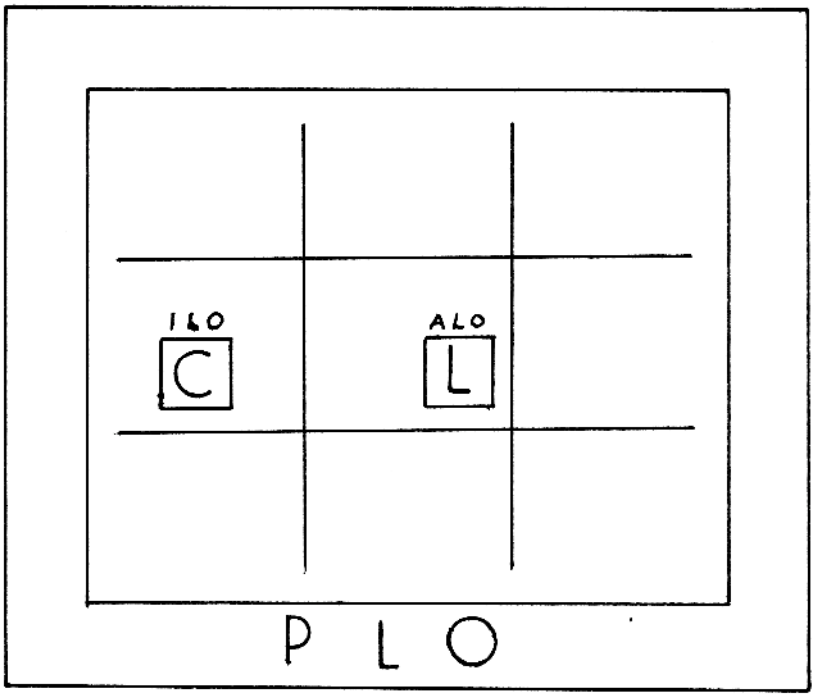
It is often difficult to define the levels of progress toward a goal in such a way as to

indicate the segment of development assigned to a particular program. Sometimes all that can be done is to indicate the relative priority attached to each selected goal. This priority is then reflected in the macro curricular categories selected as contributing to a goal. The number and nature of these categories provides an index of the progress expected to be made toward the goal.

In addition to the degree and level of emphasis on a goal, there is often only one explicit part, or implicit aspect, of a goal that is appropriately of concern to a particular program. When a goal statement enumerates or suggests several sub-components, e.g., levels of citizenship or various, basic skills, only one of them may be applicable to a given subject or institutional level. Similarly, general terms, such as "thinking" or "creative expression," imply aspects pertinent to one subject or another, e.g., "quantitative thinking" or "creative writing."

Thus, goal refinement may proceed from institutional goals to subject and level goals and, finally, to course goals, by various combinations of selection, priority assignment, designation of an intermediate attainment target, or identification of a sub-part or manifestation to be emphasized. There are instances when the attainment of a micro goal is relegated to a single macro curricular category, and the two appear to be synonymous. For programs serving individuals with special kinds of problems, e.g., handicapped, disadvantaged, program goals may be set by analyzing students' entry status and establishing progress targets relative to ultimate desired status in areas of greatest diagnosed deficiency.

Chapter 5: Curriculum Content



Chapter 5

CURRICULUM CONTENT

5.1 Potential, Intended, and Actual Learning Outcomes

Educational goals express intentions regarding broad educational results expressed in terms of desired learner characteristics. Curriculum expresses intentions in terms of learning outcomes to be achieved. In short, goals are intended development outcomes; curriculum consists in intended learning outcomes.

Anything that is known, learnable, and teachable is a potential candidate for inclusion in curriculum. Potential learning outcomes (PLO's) are, therefore, extremely numerous. A PLO does not become a curriculum item, however, until a decision is made investing it with an intention that it be learned and, therefore, that it be taught. When the selected PLO's have been appropriately organized, they constitute a "curriculum," which is here stipulated to be "a structured series of intended learning outcomes" (Johnson, 1967).

While this interpretation is at variance with the prevalent ones which identify curriculum with activities, experiences, and enterprises, it is essential to the model here developed that a distinction be made between what learners are to do and undergo and what they are to learn there from. What is to happen during instruction must not be confused with what is to result from those occurrences. If agreement cannot be reached on the more precise conception of curriculum, it may be preferable to abandon the corrupted term and refer instead to ILO's (intended learning outcomes) and ILO categories. It would be less awkward, however, to use the perfectly good term, "curriculum," if it could be used correctly, as some writers have taken care to do throughout the years, viz.:

> ". . . the learnings which children should attain while in [the teacher's] care . . . independent of the method [used in helping] the pupil attain them" (Melvin, 1931)
>
> ". . . only a statement of what the pupil is to learn" (Shoben)
>
> ". . . prescription for what pupils should learn and teachers should teach" (Dyer et al., 1956)
>
> ". . . a set of intended learnings" (Goodlad and Richter, ca. 1966)
>
> ". . . a roughly ordered description of . . . the ultimate and somewhat gross behaviors intended as a consequence of instruction" (Corey, 1967)
>
> ". . . what the learner is expected to learn from his school experience" (Browder, Atkins, and Kaya, 1973)

Contrasted with both a PLO and an ILO is an ALO, an "actual learning outcome." This is a learning outcome that has actually been achieved, whether through instruction or without it. An ALO may or may not have been intended to be acquired through instruction; if it was, then it was a curriculum item, but if not, it is an "unintended learning outcome." Not all ALO's were intended and not all ILO's are achieved. Further, not all ALO's are observable. OLO's (observable learning outcomes) are a sub-set of ALO's (see Figure 5.1).

Teaching can be both a "task" word and an "accomplishment" word. Under the latter interpretation, there has been no teaching unless learning has occurred; under the "task" notion used here, teaching takes place whenever actions are carried out with the intention of facilitating learning, whether or not the learning actually results. "Teaching" is a term that is used at the occupational, enterprise, and act levels (Komisar, 1968; Berger, 1969).

In the present context, teaching is an act or set of acts which implement an instructional

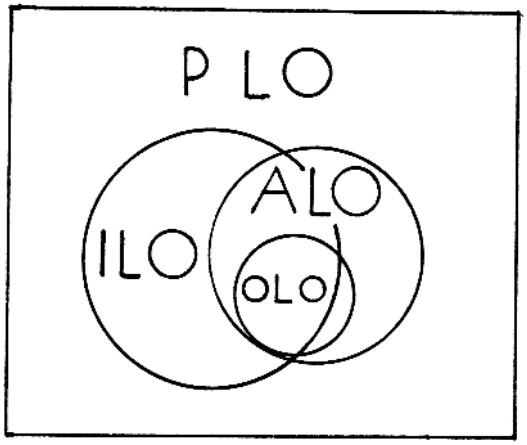


Figure 5.1. Relationships among potential, intended, actual, and observed learning outcomes.

plan. Teaching acts represent one component of instruction. The learning they are intended to bring about is the curriculum. TWO requirements of a curriculum item, therefore, are that it be something learnable and moreover that it be teachable, i.e., procedures must be available that are known, or at least believed, to be efficacious in facilitating its being learned.

To be teachable a thing must be learnable, and to be learnable it must be known. Acquiring knowledge of something not previously known may be called discovery or invention, but not learning. Something may be known, however, yet not available to be learned, e.g., a military or industrial secret or a component of an unfamiliar culture. To be teachable, and hence eligible for inclusion in curriculum, an item must be not only known but available to those responsible for the instruction. In order for something to be eligible for inclusion in a curriculum, it is not enough that it be known by someone; it must be known by the person who intends to teach it. It cannot, however, already be known by the learner for whom the curriculum is intended, as it is then no longer learnable by him.

5.2 Learning and Receiving Instruction

Learning is often defined as a change in behavior. This is not, however, a useful way of defining learning, since situational factors are also influential in determining behavior. Whether a person behaves in a certain way depends partly on what he has learned, but also on other circumstances. One can learn that something is the case and one can learn how to do something. One can also acquire through experiences a predisposition to behave in a positive or negative manner with respect to some referent, and it is then commonly asserted that an attitude has been learned. Learning, therefore, is a process that results in a changed potential for behavior, both as to capability and inclination to respond, and a learning outcome is such changed potential, whether exhibited or not.

It is true that one cannot prove that learning has occurred without observing some change in verbal or overt behavior. But just because no evidence is obtained in no way indicates that learning has not occurred. Prior to any attempt to secure evidence, and quite independently of such efforts, the learning either has or has not resulted. Moreover, while the presence of a new response (behavior) may be strong evidence that learning has occurred, its absence does not necessarily mean that the potential for a particular behavior has not been learned. In "natural" situations, a response indicative of learning may be not manifest itself due to the decisiveness of situational factors. In contrived" (testing) situations a failure to respond appropriately might be due to failure to understand what is expected or unwillingness to perform, rather than an absence of learning.

To qualify as learning, the change in potential for behavior must have been acquired through some transaction with the environment, i.e., through "experience." Changes due to ingestion, falling asleep or awaking, injury, infection, injection or other factors that can affect one's ability or inclination to respond are clearly ruled out as instances of learning. Moreover, the experience need not be had in an instructional context.

There is no convenient term for the role of the potential learner in an instructional situation corresponding to the teaching-as-task role. A person can, however, engage in activities with the intention of learning without actually learning what was intended and, indeed, possibly without learning anything at all. If the teaching role is played by an "instructor," the counterpart role might be that of "instructee," but this term is not standard. Still, there can be no instruction without both of the complementary roles, as well as a concurrence of intentions, providing an element of "thirdness" to the dyad (Gowin, 1961). This process of behaving with the intention of learning under the influence of someone intending to facilitate learning is not the same as the inferred process previously designated in the model as "learning," to which ALO's are attributed. Unlike this latter process, the process of behaving as an "instructee" necessarily implies the existence of a curriculum (ILO's). The term "learner" (and sometimes, "student") is used in this book to mean a "person intending to learn under instruction," not necessarily one who has learned or is learning.

5.3 Items and Categories

Specific learnable items constitute microcurricular content when they have been invested with the intention that they be learned as a result of instruction. A microcurricular item may be a specific "know-that" disposition (cognition), or a specific "know-how" disposition (performance capability), or a specific affective disposition. These three types of ILO are sometimes referred to as understandings, skills, and attitudes.

When two or more such items are included in a category, explicitly or implicitly, the category is a macrocurricular entity. An instructional "topic" or "unit" is such a macrocurricular entity, and while its title does not specify the microcurricular items (ILO's) subsumed, it is taken for granted that there are some. A knowledgeable person can often infer what specific items are included, with a degree of certainty that depends on how well-established the category title is. At a still higher level, "subjects," "fields," and

"programs" are macrocurricular categories, comprising even larger numbers of specific ILO'S.

In an analytic approach to curriculum selection, macro categories are decided upon first, and then the specific ILO's to be included in them are determined. A synthetic approach begins with the identification of microcurricular items, which are later organized into macrocurricular categories.

5.4 Curricular and instrumental Content

The content of instruction is much broader than the ILO items and categories which form the content of curriculum. In some instances, some of the content of instruction is explicitly indicated by the curriculum. Seldom, however, is all instructional content dictated by curriculum. In addition, much "instrumental content" must be selected in the instructional planning process.

"Instrumental content" is that cultural content which is used in instruction to achieve the ILO'S, but which is not itself intended to be learned. Without it the intended learning could not take place, but often there exists a wide variety of possible instrumental content, and instructional planners have wide latitude in selecting that which is most appropriate for the particular learners. Such factors as the availability of materials embodying appropriate content and the preferences of teachers for certain content influence the choice of instrumental content. Thus, even though curriculum may be common to a variety of situations, much of the content of instruction may differ. Those who define curriculum in terms of planned learning experiences, instead of intended learning outcomes, do not make this distinction and consequently limit the freedom of instructional planners by including one of their functions, the selection of instrumental content, under curriculum development. Teachers who fail to distinguish between curricular and instrumental content frequently test their students' learning of the latter, which was never intended to be learned.

5.5 Forms and Areas of Content

Microcurricular items are commonly classified on the basis of the form of behavior potential

they represent, e.g., cognition, performance capability. Macrocurricular categories, on the other hand, are usually given names referring to the object of the potential behavior, e.g., history, sewing. Actually, however, all curriculum content, at any level, must have both form and substance, i.e., refer to some form of potential behavior and to some object area to which it is directed.

To identify a particular microcurricular item as being a "concept" does not indicate much about what is intended to be learned, because there are numerous concepts. But an item would not be complete either if it merely identified some object area, such as "density," since it is not clear whether the intended learning is the concept, "density," knowledge of the densities of various substances, the ability to measure or calculate density, or something else.

Curriculum items may, but need not, be stated in behavioral terms. Such statements specify what evidence will be accepted that the intended learning has taken place. This specification is necessary before evaluation can occur, but is not essential for instructional planning. Stating a curriculum item behaviorally does not make it a behavioral item, in the sense that the intended learning is some performance capability. It merely recognizes that learning of any kind can be demonstrated only by being inferred from performance of some sort. The behavioral statement, therefore, must specify (1) what the learner is expected to be able to do to demonstrate the learning. Some authorities insist that it must also specify (2) under what conditions the performance is to occur and (3) what will constitute acceptable performance (Mager, 1961; Bernabei and Leles, 1970).

When a curriculum item is a performance capability, there is no alternative to stating it in behavioral terms, although the precise conditions and standards of performance need not be specified. Cognitions and affective responses, on the other hand, can be evaluated in a number of ways. The intention of the curriculum developers may be that the learning be such that it can be demonstrated in any or all possible ways and not merely by a single kind of performance specified

in advance and announced to the learner. For example, knowledge of a concept can be revealed by stating or recognizing its definition, by giving or recognizing examples of its referent, by using it properly in stating a generalization or in interpreting a situation, and in other ways. For many instructional planners, therefore, it is sufficiently informative to state a curriculum item as "concept of density," since the instruction planned to develop a concept would not in any case be limited to developing the ability to demonstrate knowledge of the concept in only one predetermined way. Curriculum does not necessarily specify manner of evaluation, anymore than it specifies manner of instruction. It must, however, specify both the form and content of intended learning outcomes.

5.6 Taxonomies of Curriculum Items

A taxonomy is a classification system based on a hierarchical principle. The first taxonomy of curriculum items was developed by Bloom et al (1956). Although it dealt with "educational objectives," these objectives were at the level of things to be learned and therefore represent curriculum items, rather than educational goals. The major division was into three domains: cognitive, psychomotor, and affective. The first taxonomic handbook classified the cognitive domain; a second by the Bloom group classified the affect domain (Krathwohl et al., 1964). Various attempts were made to categorize psychomotor outcomes (Simpson, 1966; Alles, 1967; Kibler, Barker, Wiles, 1970); and finally a handbook comparable to the others was prepared by Harrow (1972).

Whether the handbooks do in fact provide taxonomies or merely systems of classification categories is open to question. It is evident that different bases for classification have been employed in the three handbooks. The cognitive and psychomotor domains have been organized along some notion of complexity of the learning, whereas the classification of affective domain is based on degree of internalization of the learning by the learner (Alles, 1967). Thus, the six cognitive categories (see Figure 5.2) represent different kinds of learnings without reference to how well they may or may not have been learned by a

COGNITIVE DOMAIN (Bloom et al, 1956)

1.0 KNOWLEDGE
- 1.1 Specifics
  - 1.11 Terminology
  - 1.12 Specific facts
- 1.2 Ways and Means of Dealing with Specifics
  - 1.21 Conventions
  - 1.22 Trends and sequences
  - 1.23 Classifications and categories
  - 1.24 Criteria 1.25 Methodology
- 1.3 Universals and Abstractions in a Field
  - 1.31 Principles and generalizations
  - 1.32 Theories and structures

2.0 COMPREHENSION
- 2.1 Translation
- 2.2 Interpretation
- 2.3 Extrapolation

3.0 APPLICATION

4.0 ANALYSIS
- 4.1 Elements
- 4.2 Relationships
- 4.3 Organizational principles

5.0 SYNTHESIS
- 5.1 Production of unique communication
- 5.2 Production of plan or proposed set of operations
- 5.3 Derivation of set of abstract relations

6.0 EVALUATION
- 6.1 In terms of internal evidence
- 6.2 in terms of external criteria

Figure 5.2. Taxonomy of educational objectives (curriculum items).

AFFECTIVE DOMAIN (Krathwohl et al., 1964)

1.0 RECEIVING (ATTENDING)
- 1.1 Awareness
- 1.2 Willingness to Receive
- 1.3 Controlled or Selected Attention

2.0 RESPONDING
- 2.1 Acquiescence in Responding
- 2.2 Willingness to Respond
- 2.3 Satisfaction in Response

3.0 VALUING
- 3.1 Acceptance of a Value
- 3.2 Preference for a Value
- 3.3 Commitment

4.0 ORGANIZATION
- 4.1 Conceptualization of a Value
- 4.2 organization of a Value System

5.0 CHARACTERIZATION BY A VALUE OR VALUE COMPLEX
- 5.1 Generalized Set
- 5.2 Characterization

PSYCHOMOTOR DOMAIN (Simpson, 1966)

1.0 PERCEPTION

2.0 SET

3.0 GUIDED RESPONSE
- 3.1 Imitation
- 3.2 Trial and Error

4.0 MECHANISM

5.0 COMPLEX OVERT RESPONSE
- 5.1 Resolution of Uncertainty
- 5.2 Automatic Performance

Figure 5.2 (continued).

PSYCHOMOTOR DOMAIN (Alles, 1967)

1.0 INITIATORY LEVEL OF EXECUTION

2.0 PRE-ROUTINE LEVEL OF EXECUTION
- 2.1 Non-adaptive
- 2.2 Adaptive

3.0 ROUTINIZED LEVEL OF EXECUTION
- 3.1 Non-adaptive
- 3.2 Adaptive

PSYCHOMOTOR DOMAIN (Harrow, 1972)

1.0 REFLEX MOVEMENTS

2.0 BASIC-FUNDAMENTAL MOVEMENTS

3.0 PERCEPTUAL ABILITIES

4.0 PHYSICAL ABILITIES

5.0 SKILLED MOVEMENTS
- 5.1 Simple Adaptive Skill
- 5.2 Compound Adaptive Skill (with implement)
- 5.3 Complex Adaptive Skill
  - Levels
    - Beginner (approximation)
    - Intermediate (efficiency)
    - Advanced (consistency)
    - Highly skilled

6.0 NON-DISCURSIVE COMMUNICATION
- 6.1 Expressive Movement (posture, gesture, facial)
- 6.2 Interpretive Movement (aesthetic, creative)

Figure 5.2 (continued).

particular individual, while the five affective categories do not refer to different kinds of affects, but rather concern the extent to which any affect has been "learned" (internalized) by a particular individual. The affective domain, therefore, does not denote kinds of curriculum content. its significance for curriculum lies in its furnishing a means of indicating the extent to which specified learning outcomes are intended to be achieved, i.e., the degree to which a given affect is to be internalized.

The cognitive domain comprises two distinct types of learning outcome. Cognitive category 1.0 (Knowledge) refers to the "know-that" disposition, whereas the remaining five categories, 2.0 (Comprehension), 3.0 (Application), 4.0 (Analysis), 5.0 (Synthesis), and 6.0 (Evaluation), all refer to "know-how" dispositions. Thus, the cognitive domain is dichotomized into cognitive products (1.0) and cognitive processes (2.0-6.0). These may be designated cognitions and performance capabilities, respectively. It is widely maintained that category 1.0 consists in a process also, namely, memory or recall. Clearly, however, it is what is to be recalled, rather than the ability to recall, that is classified under the knowledge category. Furthermore, the more complex sub-categories of knowledge, such as universals and abstractions, call for more than mere memorization.

The radex model of intelligence (Guttman, 1969) identifies two kinds of performance capabilities, rule-inferral and rule-application. The outputs of the first kind of performance and the inputs of the second are, obviously, rules. Rules, along with the concepts which they relate to each other and the specific facts (data) on which they are based, make up the knowledge category (1.0). Included among rules are the rules for inferring and applying rules. The capabilities involved in inferring rules are represented by cognitive categories 2.0 and 4.0 (comprehension and analysis), and those involved in applying rules make up cognitive categories 3.0, 5.0, and 6.0 (application, synthesis, and evaluation) and all of the psychomotor domain.

The cognitive (or intellectual) abilities may be viewed as differing from the psychomotor

abilities only with respect to the degree of motor involvement relative to the knowledge component. Thus, the distinction might more appropriately be made between products and processes, i.e., between cognitions and performance capabilities (both cognitive and psychomotor) than between these two domains as such.

The affective domain is not comparable to the other two. All cognitions and performance capabilities are accompanied by some affective response. Moreover, cognitive category 6.0 (evaluation) implies a process resulting in an affective product--a value judgment in terms of good and bad, or better and worse. The human inclination to evaluate (pass judgment) is so strong that it is difficult to view this process as more "complex" than others, such as analysis and synthesis, or as in any sense being dependent on these latter abilities, which a hierarchy would imply. Since both products and processes can be (and regularly are) evaluated, the products of the evaluation process (6.0), which are affects, attach themselves to all other products and processes, i.e., cognitions and performance capabilities. Thus, while no cognition or performance capability is free of some affective overtone, neither can an affect exist in isolation, any more than such qualities as color and speed can.

5.7 Cognitions

Substantive curricular content consists in cognitions, which may be regarded as equivalent to category 1.0 (knowledge), in the Bloom taxonomy. Being of a "product" nature, it may be contrasted with curricular content of a "Process" type. It is concerned with "knowing-that," rather than "knowing-how." In order to acquire cognitions, i.e., to learn substantive content, it is necessary to use such processes as comprehension and retention, but these performance capabilities are not equivalent to the cognitions learned. It is one thing to be able to comprehend and retain something and another to have actually done so. Moreover, the cognition is that which is comprehended and retained, not these processes or the capability to perform them. Cognitions constitute what is often referred to as "subject matter." This type of "know-that"

knowledge is "propositional," rather than "procedural" (Scheffler, 1965). It comprises prescriptions (norms) and analytical, contingent, and value statements (Henderson, 1961). Unlike performative knowledge or procedural "know-how," cognitive knowledge (propositions) can be expressed in language (statements) and only in language. Neither of these two types can be entirely reduced to the other (Roland, 1961; Henderson, 1961; Scheffler, 1973; cf. Ryle, 1949).

Cognitions are sometimes classified as facts, concepts, and generalizations (Brownell and Hendrickson, 1950). In psychological terms (Gagné, 1965) these three types of subject matter are associated with several types of learning:

Cognition	**Learning Type**	**Example**
Facts	Stimulus-response Association	See π, say pi π = 3.14159...
Concepts	Concept (classificatory)	π is a member of the set of mathematical constants
	Concept (relational)	π is the ratio of circumference to diameter
Generalizations	Principle	The volume of a sphere is measured by 4/3 times π times the cube of the radius

In logical terms, facts are singular propositions, whereas concepts and generalizations are universal or particular propositions. A fact refers to a single object, quality, or event by naming it or indicating it with some demonstrative pronoun, such as "this." Facts, then, are of the form:

- This rock is granite.
- Object "A" weighs 135 grams.
- Line A is longer than line B.
- The Bastille fell on July 14, 1789.
- The latitude of the New York-Quebec border is 45 degrees North.
- Boston is the capital of Massachusetts.

Concepts are categories based on observations of specific instances (exemplars) in which similarities are noted among the exemplars with respect to some feature, i.e., they are "notations of regularity in a context of variance" (Tyson and Carroll, 1970). Concepts are named with words (or phrases) which have definitions that either refer to the noted similarities among the referents or else to a relationship between two or more other concepts represented by words so defined. A definition is a special kind of proposition which must be distinguished from other propositions pertaining to a given concept. Such words as "preposition," "divisor," "sovereignty," and "wavelength" are names for concepts.

A concept is in effect a set (or class) in which certain elements are included and from which others are excluded. Moreover, most concepts are specific sub-sets of other more generic sets. "Knowing" a concept implies knowing its elements, its sub-sets, the generic sets of which it is itself a sub-set, and other sub-sets of that generic set. A concept is at the same time a union of its sub-sets (or elements) and an intersection of its generic sets. For example, "square" is a sub-set of the sets of plane geometric figures, polygons, quadrilaterals, parallelograms, rectangles, rhombuses, and regular geometric figures. If viewed as a "regular quadrilateral," the concepts of "regular" and "quadrilateral" must be understood. If viewed as a "rectangular rhombus," an understanding of these two concepts is necessary. Under either view, it should be possible to identify any figure included in the concept "square," but under the first view it would not be necessary also to know the concept "parallelogram" and under the second it would not be necessary to know the concept "regular." Presumably, having both views represents a fuller understanding of "square" than having only one of them.

The term used to label a concept is not the concept itself. Whether one labels a concept "chien," "hund," or "dog" (or even "bowwow") does not alter the concept. Even in the same language, the same concept can be labeled in different ways, e.g., "skillet," "spider," and "frying pan." Moreover, the same label can be attached to many

different concepts. The terms, "root" and "radical" are used to name both biological and mathematical concepts, and, respectively, athletic and political ones as well. The word "square" evokes many different concepts in addition to regular quadrilateral or rectangular rhombus, depending upon whether it is preceded by "city," "to," "perfect," or "real" or is followed by "of," "off," "dance," "matters," "deal," "corner" or "hit." Learning a word which names a concept already known is simply a matter of association and is quite a different type of curriculum item from learning a concept and its name.

Certain relationships between facts and concepts may be noted. Knowing, and being able to state, the sentence that expresses a fact is not the same as knowing the fact, and knowing, and being able to state, the definition of the word naming a concept is not the same as knowing the concept. In order to know a fact, certain concepts must be known, as must the language used to refer to them. The fact that Shakespeare was a 16th century English playwright is meaningless without such concepts as time, nation, theater, number, and writing. It undoubtedly has greater meaning to one who also knows other concepts, such as bard, Elizabethan age, sonnet, and tragedy, as well as other facts, such as Shakespeare was a contemporary of Jonson, Hamlet was written by Shakespeare, and The Globe Theater in London burned in 1644.

By the same token, knowing a concept also depends on knowing facts and other concepts. The facts needed are expressed as singular statements, reported or based on observation, referring to specific instances and non-instances of the concept in question. The concepts needed are those required to understand the facts and those generic concepts of which the one in question is a subset. Some concepts can only be understood in terms of other concepts. These are relational concepts, such as "density," which depends upon knowledge of the concepts of "mass," "volume," "unit," and "division." However, observation of the fact that one object is heavier than another of equal volume or that one object is larger than another of equal mass also contributes to understanding of the concept "density."

The third type of cognition is a generalization, which is a universal, particular, or probabilistic proposition (statement) expressing a relationship between two or more concepts (Brownell and Hendrickson, 1950). Knowing a generalization obviously requires knowledge of the concepts whose relationship is described, but it also depends upon knowing certain facts upon which the conclusion regarding a contingent relationship is based or the premises from which an analytic conclusion is deduced (Henderson, 1961). Again, being able to recite the statement expressing the relationship is not equivalent to understanding the generalization.

Generalizations, which are variously known as principles, laws, canons, and hypotheses, are of the form:

- All prime numbers greater than 2 are odd.
- Prices tend to increase as demand increases and supply decreases.
- The volume of an enclosed gas is inversely proportional to its pressure and directly proportional to its temperature.
- Most American politicians are men.
- More large cities are located in the temperate zone than in the frigid zones or the torrid zone.

The products of cognitive activity are, then, facts, concepts, and generalizations. These cognitions are "know-that" dispositions and being known, they can be learned. As potential learning outcomes, they constitute one form of curriculum content.

5.8 Performance Capabilities

"Know-how" dispositions are commonly called "skills." Unfortunately, however, the English word "skill" has two connotations--one the simple capability of performing an action and the other a qualitative characteristic of a performance implying excellence of results and efficiency of action. But some actions cannot be performed more or less

efficiently or intelligently, nor can they produce results of varying excellence. They can simply be performed or not performed, e.g., they require "noncritical" competences (Scheffler, 1965). In such instances, knowing that something is done in a certain way is essentially equivalent to knowing how to do it. The term "performance capability" (King and Brownell, 1965) denotes curriculum content of the process type, regardless of whether it entails skill or not.

This term also indicates that it is the capability of performance that is learned, not the performance itself or the tendency to perform. As a result of learning, one can be said to possess a capability, but not to possess a performance. Moreover, a capability indicates what one can do, not what one will do.

Performance capabilities vary in the relative amount of cognitive knowledge and motor response they involve. Those which entail the manipulations of material objects (including the individual's own body) have significant, though varying, motor components, whereas in those which entail the manipulation of symbolic or ideational content, the motor component is usually insignificant. The latter capabilities (e.g., comprehension, analysis, synthesis, evaluation) obviously have extensive cognitive knowledge components, whereas in those concerned with the manipulation of concrete objects, the cognitive knowledge component ranges from considerable to negligible. Figure 5.3 depicts a continuum based on the proportion of the motor response and cognitive knowledge components.

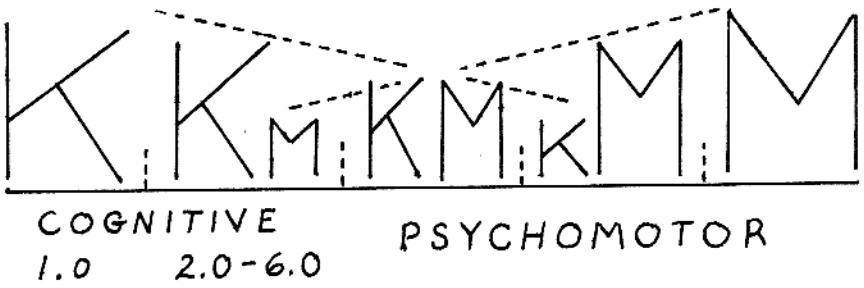


Figure 5.3. Continuum of performance capabilities based on proportion of motor response (M) and cognitive knowledge (K) (after Alles, 1967).

Performance capabilities can be developed (learned) to varying levels of routinization and versatility (Alles, 1967). Versatility refers to the range of situations in which the capability can be applied. Routinization refers to the effectiveness and efficiency of performance within a given situation. These latter qualities are basically matters of accuracy and speed. All of these characteristics have reference to the degree to which an individual develops a particular capability, not to distinctions among kinds of performance capability. Presumably, however, performance capabilities do differ with respect to the range of situations to which they are potentially applicable and the extent to which they admit of varying degrees of accuracy and speed. When performance capabilities which have the potentiality of a wide range of application or degrees of routinization are included as curriculum content, these qualities have significance in defining the learning outcome intended. The capability of more routinized or versatile performance, such as that possessed by a "champion," may be viewed as a different learning outcome from the initial performance capability.

Performance capabilities are emphasized in so-called "process" curricula. The processes in which it is advocated that competence be acquired vary so greatly in specificity that some are more in the nature of micro goals than of curriculum content. Some pertain to a particular subject, e.g., "Science--A Process Approach" (SAPA), while others are general psychological, social, intellectual, or practical attainments. A compilation from three different sources is presented in Figure 5.4. More than a dozen additional "life skills," some closer to states of being, are to be found in an ASCD yearbook (1969). Such global micro goals are clearly analyzable into numerous specific performance capabilities, as well as cognitions and affective orientations.

5.9 Affective Outcomes

Emotional response is in one sense simpler than cognition and performance, and in another sense it is more complex. It is simpler in that humans who know and can do little are still capable of affective reaction. But affects are more

complex in that they are more difficult to describe and classify than are cognitions and performance capabilities. Nor is it clear in what sense and to what extent affects can be learned and taught.

Acquiring information (PR)	Knowing (B)
Assessing (PR)	Loving (B)
Classifying, organizing (B; S)	Measuring (S)
Communicating (B; S)	Observing (S)
Creating (B)	Perceiving (B)
Decision- (choice-) making (B; PR)	Predicting (S; PR) Thinking (PR)
Determining consequences (PR)	Using numbers (S)
Foreseeing (PR)	Using time-space relationships (S)
Inferring (S)	Valuing (B; PR)

Figure 5.4. Participles from three sources dealing with "process curricula," most of which are more properly micro goals than curricular performance capabilities. B - Berman (1969), S SAPA (1967), PR - Parker and Rubin (1966).

There is no question but that situations can be contrived (experiences provided) in which an emotional response is elicited. But whether the particular response can be said to have been "learned" in that situation is another matter. Merely to evoke and cause to be demonstrated an existing, previously learned response constitutes testing, not teaching. One can, of course, introduce an unfamiliar stimulus or alter the perception of a familiar one and thereby attain affective learning simultaneously with the learning of a cognition. or one can teach a new way of responding to an emotion-eliciting stimulus, and thereby attain affective learning simultaneously with the learning of a performance capability. The question is whether or not there can be affective learning apart from the learning of cognitions and performance capabilities.

There are both passive and active aspects of affective learning. These may be labeled, respectively, emotion and conation (Klingberq, 1970). One can learn to react to a given stimulus situation

with a certain feeling, positive or negative. While such emotional response usually entails some overt behavior, it is essentially passive or receptive. But one can also acquire through learning a tendency or propensity to initiate a certain kind of action in various stimulus situations. This motivational or conative response is the active side of affective learning. A curricular distinction may be made, therefore, between the intention that an individual learn to experience a particular emotion under certain circumstances and the intention that he acquire a tendency to act in some particular manner when the emotion is aroused.

Whether the stimulus is recognized or not, every affective reaction appears to have some referent, toward or away from which the tendency to respond is directed. The referent may be a class of "objects" or a particular member of a class. The response tendency in either direction can vary in intensity. Any predisposition to respond, positively or negatively, with respect to a referent (object) is an attitude (see Figure 5.5). The

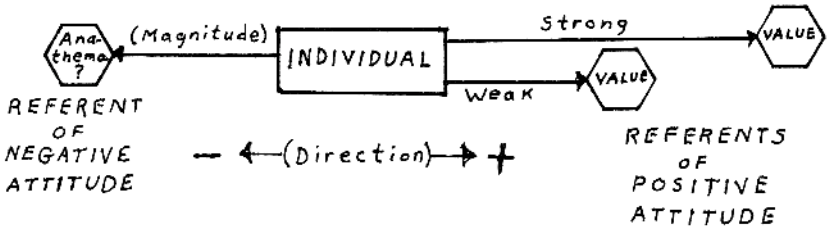


Figure 5.5. Anatomy of an attitude.

referent of a positive attitude (pro attitude), i.e., a state of affairs deemed desirable, is a value. A value can be "taught" to the extent that an attitude toward the particular referent can be influenced in a positive direction. "Con attitudes" also have referents, but there is no familiar term comparable to "values" with which to label these disvalues, execrations, abominations, or anathemas.

An "interest" is a positive attitude, the referent of which is an activity. An interest inventory asks which of various alternatives a person would prefer to do. To say that a person is interested in "music" does not make clear whether his interest is in listening to it, performing it, composing it, or studying its history. An interest can be "taught" to the extent that an attitude toward participation in a particular activity can be influenced in a positive direction. Presumably the interest is acquired (learned) in conjunction with acquiring or improving the performance capability involved.

A term often used in connection with affective learning is "appreciation." Its meaning is extremely vague. It may be equivalent to cognitive understanding with little if any bearing upon liking and disliking in the pleasure-pain continuum. Thus, one may be said to "appreciate" a work of art that one does not "like," if one understands such things as its composition, symbolism, and origin and the techniques employed in creating it. In another sense, however, "appreciation" implies a positive attitude toward something, usually the aesthetic qualities of a product or process. Such an attitude may be intuitive and impulsive, but presumably if it is subject to being taught, the teaching must entail increasing understanding of the significant aesthetic aspects of the referent and of the techniques of the creative process, as well as developing the performance capability of recognizing these aspects and techniques. Many artists insist that such learning is possible only through acquiring the performance capabilities involved in the creative process itself. Thus, it is claimed, for example, that only one who has himself painted can appreciate a painting. At the other extreme is the position that one may not "know" art but can know what one likes (appreciates). Neither of these interpretations seems appropriate for curriculum. Nor do such other meanings of "appreciation" as "gaining in value" or "gratitude." As curriculum content, an appreciation is most usefully considered to be a "justified preference" or an "enlightened cherishing." The preference and cherishing imply an attitude; the adjectives "justified" and "enlightened" imply knowledge of appropriate criteria for preferring (Bloom, 1.24).

implicit also is the intellectual performance capability known as "evaluation" (Bloom, 6.0).

Obviously, many attitudes derive from generalizing uncritically on the basis of emotion, misinformation, or incomplete facts. Since it is possible for one person to influence another to adopt such attitudes, they are subject to the instructional process and, hence, conceivable as curriculum content, at least within the context of a training program. Their "miseducative" quality makes it difficult to think of them as content of an educational curriculum. Education implies the re-examination of existing attitudes and the development of new ones on a rational basis.

Since affects cannot exist apart from some cognition or performance capability, they do not constitute a separate category of curriculum content. Yet, most cognitions and performance capabilities that are learned are accompanied by some affective response. If a particular kind of response is intended to accompany the learning, then the affective quality is of curricular significance. Thus, interests, values, appreciations, and attitudes generally enter the curriculum in connection with a cognition, performance capability, or combination of these. The relationships among the three domains shown in Figure 5.6 may be more useful than that suggested by the standard taxonomies.

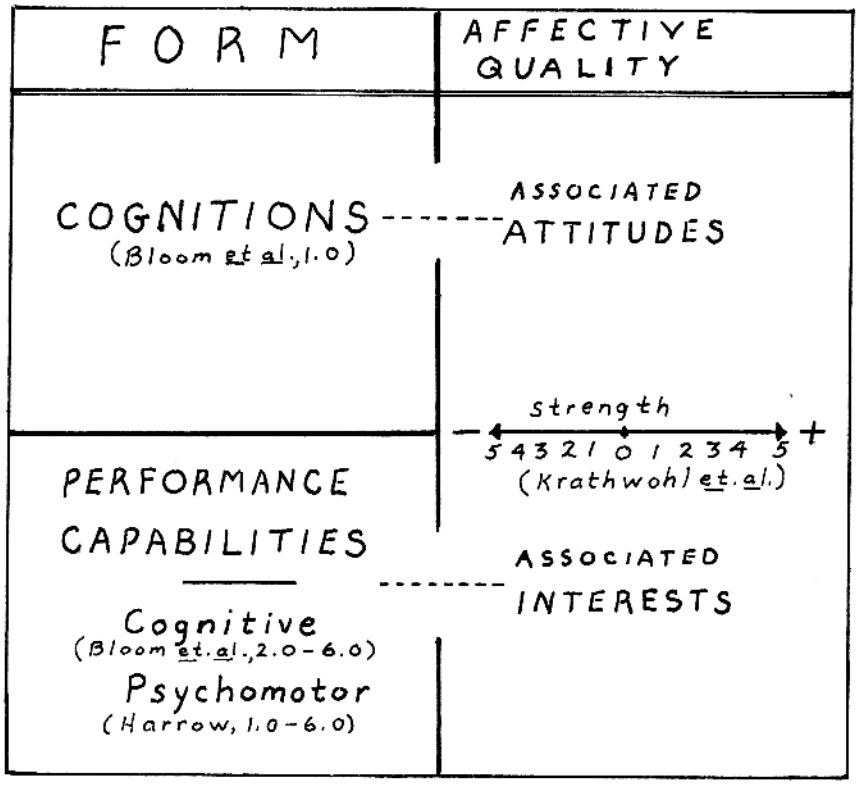
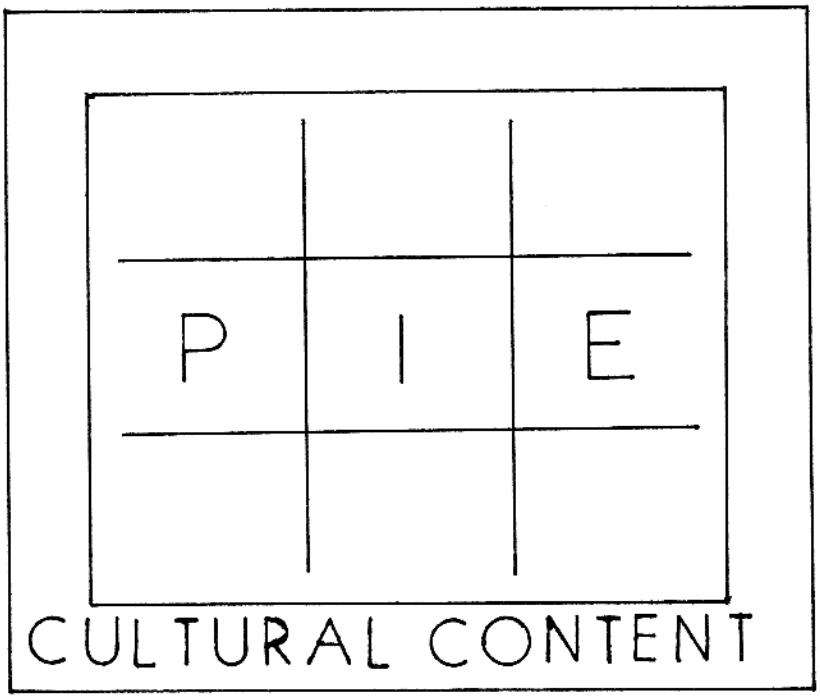


Figure 5.6. The three conventional domains are not discrete and comparable, but related on the basis of form and quality.

Chapter 6: Source of Curriculum

6.1 Scope of Potential Curriculum items
6.2 Criteria Sources and Content Source
6.3 Cultural Content
6.4 Disciplined Knowledge
6.5 Realms of Meaning
6.6 Human Enterprises and Conventional Wisdom
6.7 Occupations as a Source of Content
6.8 Ordinary Experience as a Content Source



Chapter 6

SOURCES OF CURRICULUM CONTENT

6.1 Scope of Potential Curriculum Items

There are two facets or dimensions to a curriculum item. One is its type: an item must be some variety of cognition or performance capability with some attendant affective quality. But an item must also have a second dimension having reference to its subject matter. Thus, while an item of the cognition type might be a concept, it must be a concept pertaining to some area of subject matter. "Syncopation" is a music concept; "photosynthesis," a biology concept. Music, biology, and all other subject matter areas comprise not only many concepts, but also facts, principles, and various kinds of performance capabilities. Each such type of potential curriculum item is distributed across numerous subject areas, and each area embraces all types of items. Obviously, it is possible to construct a grid with types (and sub-types) of items along the top as column headings and with subject matter areas (and sub-areas) along the side as row rubrics. Each resulting cell would contain great numbers of potential curriculum items.

Such a grid or "curriculum matrix" (Johnson, 1967), encompassing all areas in which man has accumulated knowledge, would define the total pool of all potential curriculum items. This pool of all teachable cultural content is the only source from which the selection of curriculum items can occur. Steps toward the development of a comprehensive matrix or "pharmacopeia" of potential learning outcomes have been taken by Putnam and Chismore (1967) and by Flanagan, Shanner, and Mager (1971).

6.2 Criteria Sources and Content Source

Some discussions of curriculum sources (e.g., ASCD, 1962) confuse the source of selection criteria with that of curriculum content. It is conventional to point to the society (its charac-

-teristics, needs, problems, or demands) as one source of curriculum, the learner (his characteristics, needs, problems, or demands) as another source, and organized knowledge (including learning theory) as the third. But while the last of these is a source of potential learning outcomes, the first two are not. Rather, they are sources of criteria on the basis of which intended learning outcomes might be selected from whatever source they might have. The best description of the source of possible learning outcomes, which constitute potential curriculum content, is the totality of "cultural content" that is transmissible through learning. This is the sum total of what mankind (or at least a particular society) knows, believes, and can do.

It is frequently argued that organized knowledge should not be the only source of curriculum and that the "needs" of learners and of society should also be included. It is true that organized knowledge need not be the only source of curriculum content--any knowledge, organized or not, is potential curriculum content. But "needs," whether of learners of society, whether inferred or expressed in the form of "demands," cannot be a source of content because one cannot teach "needs," even though they can be aroused. Whatever clues "needs" of pupils or society may provide as to what might most appropriately be taught in a given situation, they do not in themselves serve as intended learning outcomes. This is, in fact, the position taken by those who persist in calling them "sources" of curriculum.

6.3 Cultural Content

As the source of curriculum, culture is by no means limited to the elements associated with the so-called "high" or "refined" culture, but rather is to be interpreted in the broadest possible sense of the entire residual of human experience. it is, indeed, so broad that one has great difficulty categorizing it completely. Aristotle attempted to encompass all of man's activities within three categories: the theoretical, the practical, and the productive, these being concerned, respectively, with obtaining knowledge, making decisions, and creating products (Schwab, 1964a).

Herbert Spencer (1869) assigned priorities to five kinds of human endeavor, which presumably were meant to be all-inclusive (essential to "complete living"): self-preservation, earning a living, bearing and rearing children, participating in social and political life, and enjoying the refinements of culture. While these constitute goal categories, not types of curriculum content, whatever knowledge, feelings, and actions mankind has available to serve these five aspects of "complete living" constitute the source from which curriculum content must be selected. Spencer's question, "What knowledge is most worth knowing?" is a fundamental curriculum question, but a prior concern is "What knowledge is there to be known?"

The scope of man's existing knowledge might be exposed by reference to its source. It is customary to distinguish between (1) disciplined knowledge which originally derived from, or has been verified by, the systematic, expert application of some widely accepted mode of inquiry and (2) other knowledge derived incidentally from the more "natural" experiences of the human race, i.e., those not deliberately intended to yield knowledge. The latter kind of knowledge is often called the "conventional wisdom," and that deriving from disciplined inquiry is sometimes known as "funded knowledge" (Goodlad and Richter, ca. 1966).

6.4 Disciplined Knowledge

Knowledge which is said to be "disciplined" results from, or is associated with, the deliberate efforts of many especially qualified people throughout history to increase man's understanding of particular kinds of phenomena. A "scholarly" or "academic" discipline entails both the process of systematic inquiry and the organized products of such inquiry (investigation, research, or scholarship). The multi-faceted nature of a discipline is indicated by King and Brownell (1965), who hold that, within the diverse, pluralistic world of knowledge, disciplines represent "communities of discourse" with ten isomorphic features. Each discipline is at the same time:

1. a community of persons
2. an expression of human imagination

3. a domain
4. a tradition
5. a syntactical structure (mode of inquiry)
6. a conceptual structure (substance)
7. a specialized language or other system of symbols
8. a heritage of literature and artifacts and a network of communications
9. a valuative and affective stance
10. an instructive community

The term "discipline" suggests restraint and order. Restraint implies adherence to accepted canons of inquiry appropriate to the particular domain of phenomena and also caution in drawing conclusions as a result of inquiry. order implies structure both with respect to the processes and the products of inquiry. These kinds of structure have been labeled, respectively, "syntactic" and "substantive" (Schwab, 1964a). Different structures are appropriate to different domains, and more than one structure may be suitable for a particular discipline. The various facts, concepts, principles, and procedures pertaining to a domain of inquiry are interrelated in a more or less coherently integrated body of knowledge. An arrangement of these products of inquiry, i.e., knowledge claims, in a hierarchical or some other form of relationship constitutes a "substantive" structure. A "syntactic" structure is a systematic arrangement of the assumptions and procedures through which verified knowledge is discovered within the particular domain. "Stable" inquiry within a discipline proceeds on the basis of accepted substantive and syntactic structures; "fluid" inquiry generates new ones (Schwab, 1964c).

There is a reciprocal relationship between the two kinds of structure. The substantive structure reveals the "frontier" of the discipline, where the unanswered questions, knowledge gaps, and inconsistencies indicate a need for further inquiry. The syntactic structure guides the inquiry which gives rise to new knowledge, which in turn finds its place within the substantive structure. Both structures are, therefore, essential to disciplined inquiry. Bruner (1960) has suggested that knowledge of the structures also facilitates learning within a discipline. He reported the

opinion of a group of scholars meeting at Woods Hole that awareness of structure (1) aids retention, (2) promotes transfer, (3) increases motivation, and (4) narrows the gulf between teachers and scholars within a field. Although viewed primarily as instrumental in learning, disciplinary structures were also considered by this group to be intended learning outcomes in themselves, and hence, curriculum content.

Careful investigations of several disciplines have led Gowin (1970) to emphasize five elements in the structure of any body of knowledge:

1. Its starting points (assumptions and presuppositions relating to agents, the universe, its audience, and the work)

2. Its sense of approach (its "telling" questions, connecting questions, evidence, and principles of evidence)

3. Its methods and conceptual framework (key concepts, conceptual framework, methods of inquiry, principles of verification, and principles of reporting)

4. Its products (generalizations, important facts, theories, explanations, interpretations, literary form, tangible nature, and uncertainties)

5. Its values (within the field with respect to each of the preceding aspects; outside the field with respect to further inquiry, instruction, utility, moral, aesthetic)

Specialists within a discipline may disagree about some parts of its substantive content, about the effectiveness of certain of its modes of inquiry, and about its substantive and syntactic structures. Hence, disciplines are somewhat loosely defined and sometimes factionalized into competing "schools." Nevertheless, these disagreements are within the "family," so to speak, in that no one who is not a specialist in a discipline is entitled to have an authoritative view on these matters. Those engaged in curriculum construction may receive conflicting advice from experts in a

discipline as to priorities, prerequisites, and relationships, but they have no alternative but to consult such experts regarding these matters.

In addition to internal disagreements, there are "boundary disputes" among disciplines. Several disciplines may approach the same set of phenomena from different points of view and with different methods of inquiry, e.g., psychology, sociology, and anthropology all investigate human behavior. Increasing specialization produces sub-disciplines which become almost autonomous, e.g., nuclear and solid-state physics. The overlapping of interests with advancing scholarship gives rise to new fields which may be considered disciplines in their own right, e.g., biochemistry and history of science. Hybrids, such as the history of philosophy and the philosophy of history, emerge.

The total spectrum of disciplined knowledge can be indicated in various ways. The most common division is that which trichotomizes knowledge into humanities, the natural sciences, and the social sciences. While this categorization has proved useful, it has its ambiguities and borderline cases. Mathematics is often linked with the natural sciences because of the extensiveness of its application in that branch, but since it does not employ empirical methods, mathematics may be more appropriately considered one of the humanities than a science. Or, together with philosophy and logic, which are commonly classed as humanities, mathematics might even be viewed as a "metadiscipline" (Parsons and Platt, 1973). Psychology seems to straddle the natural and social sciences, despite its origin in philosophy within the humanities. Similarly, geography and anthropology conventionally social sciences, exhibit, respectively, strong natural science concern with the physical environment and the humantics' concern with culture. Historians, economists, and political scientists disagree among themselves as to whether their fields are humanities or social sciences. The arts are often considered to constitute a branch separate from the humanities, thus distinguishing literature from the other art forms and, in particular, divorcing the reading and writing of plays from their performance and production. The circular diagram in Figure 6.1 reflects these ambiguities while

attempting to depict the range of disciplined knowledge.

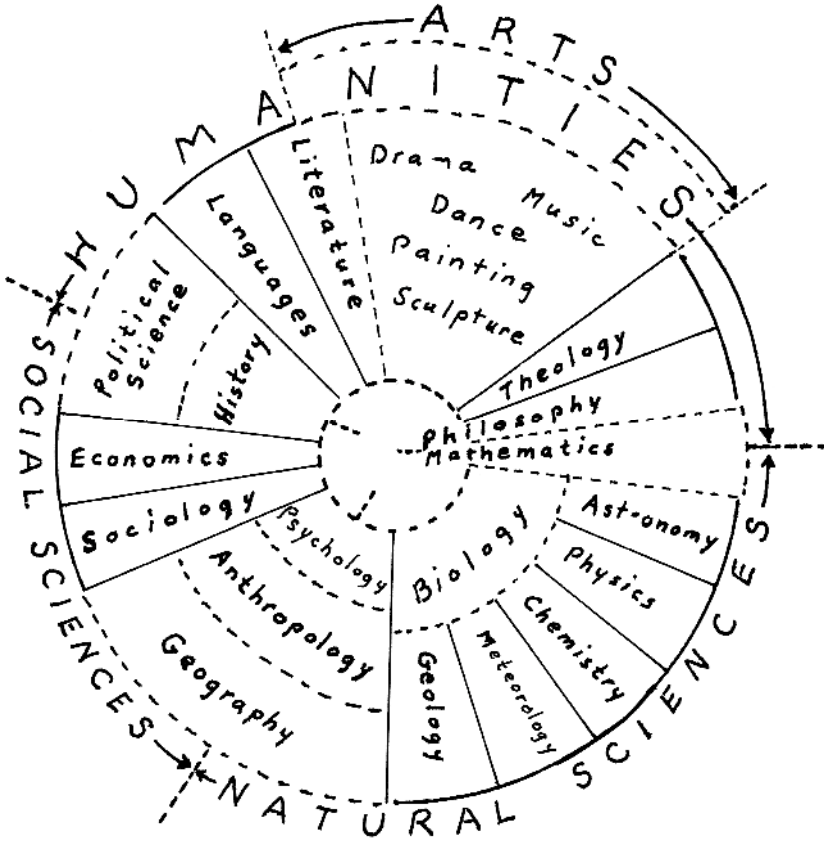


Figure 6.1. The familiar three-fold paradigm of disciplined knowledge includes some ambiguities.

6.5 Realms of Meaning

Phenix (1964b) maintained that disciplines were "knowledge organized for instructional purposes." It seems equally likely, if not more so, however, that the chief purpose served by disciplinary distinctions and organizations is the furtherance of research and scholarly inquiry, i.e., the extension of knowledge, rather than its transmission. Nevertheless, Phenix's notion of "realm of meaning" aids in conceptualizing the total scope of potential curriculum content. According to this

scheme, there are six kinds of meanings with which disciplines deal, depending upon their qualitative and quantitative emphases (Phenix, 1964a). Qualitatively the emphasis can be on fact, form, or norm; quantitatively, on the singular, the general, or the comprehensive. The realms corresponding to various qualitative-quantitative combinations are identified in Figure 6.2.

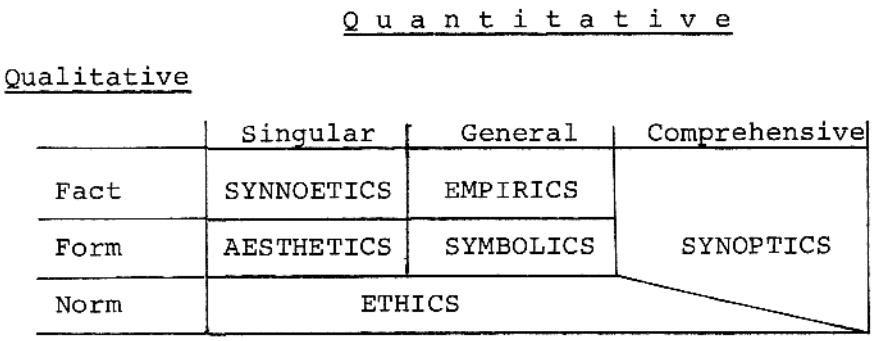


Figure 6.2. Phenix's (1964a) architectonics of knowledge with six realms of meaning.

Empirical meanings are generalizations concerned with matters of fact, e.g., scientific principles. Aesthetic meanings concern form in particular manifestations, e.g., a particular work of art. Symbolic meanings also pertain to form only, but have general applicability, e.g., numerals and letters. Ethical meanings deal with right conduct, are normative, either by usage or by legislation, and have reference both to specific instances and general classes (precepts). Synoptic meanings, such as those characteristic of history, philosophy, and religion, are even more comprehensive in nature than general principles. Singular facts have an existential meaning of their own, to which Phenix assigned the term "synnoetic." This category consists in "direct relational knowledge," an "immediate awareness" that might be considered "personal" or "private" knowledge. Such meaning is seldom transmitted through instruction, but all of the other five types presumably warrant representation in curricula.

6.6 Human Enterprises and Conventional Wisdom

The second source of curriculum content, aside from the scholarly disciplines, is the knowledge associated with the various enterprises of man. This knowledge is derived from the everyday experience of the race, rather than from systematic inquiry. While some of it is transmitted to all members of the society, much is possessed only by specialists, in accordance with the prevailing division of labor.

Virtually every human enterprise is subject to continual revision of its processes and related cognitive content. Old procedures and implements are refined and new ones invented, sometimes by chance and by informal trial and error on the part of practitioners, but increasingly through the application of new knowledge from the basic disciplines and through systematic research in the applied field itself. Museums provide graphic evidence of the evolution in such enterprises as communication, transportation, agriculture, manufacturing, construction, business, health service, and household operation. The tendency in all fields is toward improved quality of product or effectiveness of process, coupled with increased speed, decreased expenditure of human effort, and continuing compatibility with changing aesthetic tastes and concepts of morality.

The cognitions, performance capabilities, and affective orientations associated with various human enterprises have much more direct and immediate applicability than do those associated with the basic scholarly disciplines, but their applicability is at the same time much more restricted. "Practical" knowledge is for the most part applicable only in particular, fairly well-defined situations, whereas the situations in which the "abstract" knowledge of the disciplines may prove applicable are for the most part unpredictable and virtually unlimited. A given discipline, such as mathematics, language, physics, or psychology, may contribute to many enterprises, and a given enterprise may benefit from the knowledge of several disciplines. The disciplined knowledge upon which an enterprise is based is not part of the content of the enterprise, but rather of the discipline in

which it originated. By the same token, the various practical applications of disciplined knowledge are not part of the content of disciplines, but rather of the particular enterprises in which the applications occur.

The content of an enterprise is of two types: that which is the result of deliberate, systematic inquiry on some theoretical base and that which has been informally discovered in the course of carrying out the enterprise. The latter "conventional wisdom" often rests on various unexamined assumptions which may, upon being subjected to systematic scrutiny, prove to be erroneous. At any given time, however, it represents the "state of the art" or "current accepted practice." Human enterprises must proceed without waiting until the validity of every assumption and the efficacy of every procedure have been conclusively verified. Nevertheless, in enterprises such as business, agriculture, household management, education, medicine, and many others, procedures derived from systematic investigation and the application of disciplined knowledge steadily replace those advocated by "conventional wisdom."

Within any enterprise, certain performance capabilities and related cognitions are more fundamental than others in the sense that they are more frequently and widely used or they underlie more specialized or difficult processes. Quality of performance within an enterprise sometimes depends upon the acquisition of these more specialized and difficult capabilities. in other instances, however, performance quality does not hinge on particular capabilities, but rather on awareness of preferred procedures and willingness to employ them.

6.7 Occupations as a Source of Content

The full range of man's occupationally applicable cultural content is indicated by the more than thirty thousand different jobs defined in the Dictionary of Occupational Titles (DOT). The totality of cognitions, performance capabilities, and affects relevant to vocational activity is classified into eight occupational types: (1) professional, technical, and managerial, (2) clerical and sales, (3) service, (4) farming, fishery, forestry,

and related, (5) processing, (6) machine trades, (7) bench work, and (8) structural work. Each job within these occupational categories can be subjected to a "task analysis" to reveal its specific learnable content. A task description specifies job performance requirements within a particular physical and psychological context, including (1) the criterion responses which must be made, (2) to what task stimuli, (3) under what ranges of conditions. The functional elements in a given task consist of: (Miller, 1967)

1. Nomenclature and location of work objects and symbols
2. Scanning, search, and detection of task-relevant cues
3. Identification of cue patterns
4. Short-term recall
5. Long-term recall of procedures
6. Decision-making
7. Motor response

Another kind of analysis of occupations identifies 23 kinds of performances required in them (DOT, 1965):

Data	**People**	**Things**
Synthesizing	Mentoring	Setting up
Coordinating	Negotiating	Precision working
Analyzing	Instructing	Operating, controlling
Compiling	Supervising	Driving, operating
Computing	Diverting	Manipulating Tending
Copying	Persuading	Feeding, off-bearing
Comparing	Speaking, signaling	Handling
	Serving	

A job analysis in which tasks were carefully described instead of merely listed revealed each task to entail certain knowledge, varying in breadth and in depth of understanding, and also certain types of skills, classifiable as: (Gullion and Gilpatrick, 1973)

A. Manual	1. Locomotion 2. Object manipulation 3. Guiding or steering
B. Interpersonal	4. Human interaction (varying circumstances) 5. Leadership

C. Language	6. Oral use of relevant language 7. Reading 8. Written use
D. Decision-making	9. On methods 10. on quality
E. Intellectual	11. Figural 12. Symbolic 13. Taxonomic 14. Implicative
F. Error awareness	15. Financial consequences 16. Human consequences

6.8 Ordinary Experience as a Content Source

Many efforts have been made to apply "task analysis" to the entire spectrum of man's life activities, non-vocational as well as vocational.

One early analysis of human experience (Bobbitt, 1924) identified ten major types of activity:

Language	Religious
Health	Parental
Citizenship	Unspecialized
Social	Keeping oneself mentally fit
Spare time	Labor of one's calling

A survey of over thirty such analyses of social functions or areas of living led to a composite list of eight items (Harap, 1937):

Living in the home	Communication
Leisure	Transportation
Citizenship	Production
Organized group life	Consumption

Each such application category entails a vast amount of disciplined knowledge as well as conventional wisdom.

Among the ten categories into which Stratemeyer et al (1947) grouped their "persistent life situations," listed in Section 4.10 are four which represent areas of disciplined knowledge rather than enterprises in which people engage, viz.,

intellectual power, natural phenomena, technological phenomena, and economic-social political structures and forces. The remaining six categories resemble other analyses of human experience out of which beliefs, procedures, and values have informally been derived:

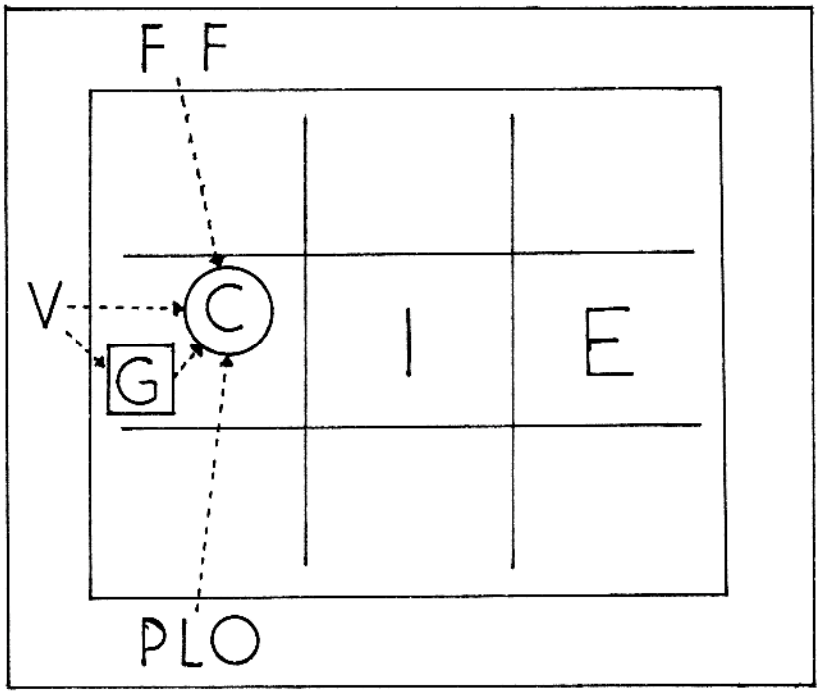
Health
Moral choices
Aesthetic expression and appreciation
Person-to-person relationships
Group membership
Intergroup relationships

Insofar as such inventories of human activities identify situations in which disciplined knowledge is likely to find application, they serve as a source of potential curriculum content that is not inherent in the disciplines themselves. Beyond this contribution, however, they have two serious limitations pertaining to validity and comprehensiveness.

There are authoritative experts in the various disciplines, professions, crafts, and arts who can validate the knowledge related to their specialties. With respect to beliefs, procedures, and values derived through informal experience, however, there are no authorities. No one is an expert or specialist on how to live. Parents can transmit to their children their preferred solutions to problems of everyday living, but for society to do so through its formal educational institutions would require that choices be made without a satisfactory basis for ascertaining the validity of available alternatives.

Any inventory of what adults do in the course of living is, moreover, only a description of the status quo. To treat current adult living practices as an adequate source of curriculum content is to view the status quo as both satisfactory for the present and adequate for the future. Presumably much valid knowledge is not currently widely used. Since there is no assurance of either the completeness or the validity of the knowledge implied by the identified tasks, such task analyses of human activities cannot be assumed to identify the entire source of potential curriculum content.

Chapter 7: Curriculum Selection



Chapter 7

CURRICULUM SELECTION

7.1 The Inevitability of Selection

The selection of a limited number of curriculum items from the vast pool of potential learning outcomes is one of the two basic processes of curriculum development, the other being to organize them in some way. Time is the chief factor making selection necessary, although there are other practical considerations, such as the availability of particular facilities and qualified teachers. Even if time were not limited, there are many learnings which no one but a specialist has much reason to acquire. Moreover, there are some potential learnings which sponsoring groups may not wish taught on moral, political, and other ideological grounds. Sometimes psychological reasons are advanced for preferring to include one learning rather than another.

The unremitting expansion of knowledge makes the task of selection increasingly difficult. If the selection is to be done rationally, curriculum developers must, in addition to being aware of the sources of potential items, be clear about their selection criteria and know how to apply them.

7.2 Criteria for Criteria

Consideration of appropriate selection criteria raises prior questions regarding their source and the criteria that such criteria must meet, individually and collectively. Raising questions regarding criteria for criteria may appear to introduce a process which could be extended ad infinitum. Fortunately, however, this is not the case, for the next step in the progression, criteria for criteria for criteria, is merely a special case of the preceding one. Whatever applies to any criterion or set of criteria also applies to the particular criteria that pertain to criteria.

A criterion is a rule for making a judgment. A rule is a generalization. Making a judgment involves applying the rule, i.e., recognizing a specific exemplar of the generalization. All that is required of an individual criterion is that it be discriminative. It is desirable that a criterion be as clear and unambiguous as possible, but that is not essential. That a rule necessitates subjective judgment in applying it does not disqualify it as a criterion. But if a rule makes reference to attributes possessed by either all or none of the potential alternatives, it is not discriminative and, hence, not a criterion. A criterion must stipulate characteristics actually or conceivably attributable to at least some of the items in the universe of selection.

There are at least three other criteria for criteria, but, unlike the discriminational requirement, these are applicable to a set of criteria rather than to an individual criterion. These are that the several criteria in a list ought to be (1) all-inclusive, (2) mutually independent, and (3) non-contradictory. If an item selected as meeting all criteria on the list is still not acceptable on some grounds, the list is not all-inclusive. The additional grounds for rejection must be incorporated into it[1].

If one criterion in a list includes another, it is redundant, as the results of the selection process are not affected by its omission. Efficiency in selection is promoted if the criteria in a set are mutually independent. Finally, the set must not include logically contradictory criteria. A given item, selected because it satisfies one criterion, may well violate another lower priority criterion, but if the criteria themselves are inherently inconsistent with each other (contradictory), then any item which satisfies one necessarily violates the other and a decision is impossible.

[1] For some of the ideas in this section the author is indebted to Vincent Barrone, SUNY College at Oswego.

In addition to the above analytic criteria which rules must meet in order to be criteria, there are normative criteria which criteria should meet in order to be good ones. They should be relevant to the purpose of the selection. For example, it is possible to make sex, age, and race criteria for selection among people, but often these factors are not relevant to the purpose of the selection, and hence, inappropriate.

Another normative consideration is stringency. Criteria which are too stringent may exclude acceptable candidates and lead to the selection of an insufficient number of items. Conversely, overly lax criteria may admit too many candidates, some not entirely satisfactory for the purpose at hand.

7.3 Types of Criteria

Individual criteria may be absolute or relative, and collectively they can be applied conjunctively and disjunctively. A conjunctive list is one which requires that an item meet all of the criteria in order to be selected, e.g., A and B and C. Disjunctive lists permit selection on the basis of meeting any one criterion, e.g., A or B or C. A combination of conjunctive and disjunctive application of criteria is also possible. Criteria might variously be specified as both A and B and either C or D; either (A and B) or (C and D); both (A or B) and (C or D).

Conjunctive and disjunctive lists, and combinations thereof, entail absolute criteria and place no limits on the number of items that can be selected. All eligible items are selected. But it is not always possible to select all acceptable candidates. Priorities must be set. Relative criteria require specification of the number of items that can be accepted and the weight to be assigned each selection criterion. Thus, it may be stipulated that the selection consist of the N items which are most A and most B and most C. This selection cannot be made unless it is also indicated what relative weight is to be attached to criteria A, B, and C. Should one prefer an item that is high on A but low on B and C or one that is low on A but high on B and C? Multiple relative criteria

are difficult to apply. It is simpler to apply a list containing several absolute criteria and only one which is relative than a list in which one is absolute and more than one are relative. Thus, it is easier to pick the five items which are A and B and most C than to pick the five that are A and most B and most C.

7.4 Rules for Applying Criteria

When both absolute and relative criteria are to be applied, the absolute criteria should be applied first. The difficulty of ranking increases rapidly as the number of items to be ranked increases. Applying absolute criteria first reduces the number of candidates that need to be ranked.

As between two or more conjunctive absolute criteria, the easiest to judge should be applied first, since this reduces the number of items to which the more difficult judgments must be applied. While it is possible in some situations to apply two, or even more, criteria simultaneously, it is desirable in most instances, and necessary in some, to apply criteria one at a time. In a conjunctive situation, successive criteria are applied to the items already selected under preceding criteria, whereas in disjunctive situations, they are applied to the items previously rejected. The conjunctive application of relative criteria requires the weighting of each criterion, the rating of each candidate for selection on each criterion, multiplying weightings and ratings, summing the products, ranking the sums, and selecting the highest ranked items to fill the quota. In the rare situations in which relative criteria are applied disjunctively (most A or most B or most C), the first step must be to assign weights to the criteria and the second, to allocate the total number of anticipated selections among the several criteria in proportion to their weightings.

7.5 Goals and Values as Criterion Sources

Selection criteria relate either to desirability or feasibility. The purpose of curriculum selection is to direct instructional efforts at those learning outcomes which are considered most likely to contribute to the achievement of the

educational goals of an institution or program. The goals serve the purposes of personal development, citizenship, or vocation. The decision as to whether a particular learning contributes more than another learning does to the realization of a goal may be made on logical grounds, on the basis of empirical evidence, or by consensus or compromise. Although empirical evidence might be preferred, usually very little is available.

The relative weight given the three macro goal categories and the micro goals under each one affects the number of curriculum items that can be selected to further each goal. A training program may serve only goals that are consistent with a particular vocational purpose. The full range of appropriate learnings for the program may be clearly known as the result of a task analysis. Nevertheless, time limitations may necessitate selection of a limited number of items for the training program on the assumption that the remainder will be acquired "on the job." An appropriate selection criterion here might be the importance of the item for equipping the learner to begin functioning on the job. On the other hand, some items may be excluded from the training program, not for lack of time, but because they can be much more effectively taught in the actual job situation. In this case, items that are not important for beginning functioning might be included in a training curriculum, if they can be taught in the training situation as well as, or better than, on the job. The alternative to including them is shortening the training program.

In contrast to training programs directed toward preparation for a specific, well-defined application situation, educational programs may have goals pertaining to both socialization and the learners' personal development, and even, in part, to vocational preparation. Although "general education" is often distinguished from "vocational education," it is sometimes viewed as including the latter. In such cases, "vocational education" is usually construed as being concerned with those learnings which are applicable to all or most vocational situations, rather than as "occupational training," which concerns learnings applicable to a particular job, occupation, or occupational cluster.

If the demands common to all vocational situations and the learnings needed to meet those demands can be identified, then as in the task analysis of a specific occupation, the selection of curriculum items can be made by applying any further appropriate criteria to the full list of needed learnings and those selected can be organized or grouped into suitable macro curricular categories for instruction. Some application situations relating to non-vocational purposes, e.g., citizenship or self-cultivation, can also be predicted with some confidence and subjected to a task analysis. Micro curricular elements can then be identified on the basis of their desirability or necessity in meeting the demands of the predicted application situations. This approach, in which micro curricular items are selected first and later synthesized into macro curricular categories is the synthetic mode of curriculum development.

Although a limited number of situations pertaining to citizenship responsibilities and personal living can rather confidently be expected to be encountered at some time or other by most people in a society, they are few in number compared with all of the conceivable (and inconceivable) situations which widely differing individuals will, in fact, face in a largely unpredictable future. No "task analysis" of these numerous unforeseen application situations is possible, and hence, micro curricular elements cannot be selected directly from an available list. Instead, the common practice is first to select macro curricular categories on the basis of their likelihood of containing learnings applicable to the unspecifiable situations. Once a category has been selected, a further selection of the specific learnings to be included in it is necessary. This approach, in which macro curricular categories are selected first and later analyzed into micro curricular items is the analytic mode of curriculum development. The micro curricular selection can only be made by someone familiar with the potential learning outcomes encompassed by the category, often a "discipline" or "subject field."

In addition to serving educational goals, curriculum items are usually required to meet criteria pertaining to validity and compatibility with

certain sets of values. It is possible to learn untruths as well as truths, although one cannot, of course, know something that is not true (Scheffler, 1965). Sometimes things that experts do not consider to be true are taught because they are consistent with the values and beliefs of the sponsoring group. Another group might insist that only knowledge consistent with the most recent authoritative scholarship be included in curriculum. on matters of opinion and belief, however, where "truth" is not an issue, this same group will usually insist that the curriculum items be in accord with its own ideology.

7.6 Frame Factors as Criterion Sources

Ideally, frame factors other than values should not affect curriculum selection. If it is desirable that something be taught, then the frame factors should be manipulated as ingeniously as necessary to permit it to be taught. Practically, however, it is not always possible to provide the necessary time, space, resources, and teaching competence. Moreover, a curriculum is usually developed for learners with more or less well-defined characteristics. Therefore, in practical curriculum development, these factors impose selection criteria. If criteria relating to practicality are applied after, rather than before, those of desirability, items will be less likely to be rejected without adequate consideration of whether particular frame factors can be modified.

Time is the least modifiable factor. Curriculum priorities are commonly expressed in terms of time allocated to a particular goal or curriculum category. It is not always a reliable index of priority, however, since some relatively more important learnings can be taught more quickly than some less important ones can. Moreover, since a principal difference among individuals is the rate at which they learn particular things, the total number of items a learner will acquire in a fixed period of time will depend not only on the items themselves but on the learner's own characteristics. Nevertheless, given three potential curriculum items, A, B, and C, the decision whether or not to include "A" may be different when it is known that both "B" and "C" could be learned in the

same time than if only "B" or "C" could be learned.

7.7 Utility as a Selection Criterion

A general principle of utility underlies most curriculum selection criteria (Smith, 1967). Seldom does anyone propose teaching anything he considers useless. Opinions differ, however, not only as to what is and is not useful, but also as to what utility means. Conceptions of utility differ with respect to beneficiary, context, immediacy, specificity, and mode of use.

Beneficiary. Some learnings have utility for the society collectively in that it is beneficial to the polity or the economy for all or a certain proportion of the members to have acquired them. On the other hand, some learnings have utility only for the individuals acquiring them, with no particular benefit to other individuals or to the corporate society.

Context. A distinction can be made between utility viewed as applicability in the context of living and utility as applicability in further learning. The first is external, the latter, internal to the education enterprise. A learning with very little external utility can be fundamental internally to the acquisition of other learnings in a field of study, some of which may themselves possess great external utility. Conversely, a learning with considerable external utility may have little, if any, value for further learning.

Immediacy. The utility of some learnings is obvious to the learner, while that of others is not perceived by him. Those learnings which are immediately applicable in the current life activities of the learner are most readily perceived by him as having obvious utility. Even a child may also recognize the utility of learnings which he sees adults applying frequently or which he can anticipate as valuable in the achievement of one of his own goals. Yet, while not perceived so by immature or inexperienced learners, other learnings may ultimately be of even greater and more enduring utility than many whose usefulness, though obvious, may be trivial, or temporary, or both.

Specificity. Utility is sometimes equated with applicability in a specific, identifiable situation. Contrasted with this narrow view of utility is a broader one having reference to relevance to a wide variety of unpredictable situations. There are facts which are trivia and facts which are significant in many contexts. A concept may be valid and still not be a "good" concept, if it does not enter into any generalizations (Brodbeck, 1968). A generalization may merely summarize, descriptively, a set of specifics, or it may have predictive or explanatory value. The latter quality, which Bruner (1960) called "power," may be the most significant facet of utility, particularly in the context of further learning. Some learnings are much more powerful than others in explaining large number of phenomena. They lead someplace, with many ramifications.

Nevertheless, the frequency with which a learning is likely to be used is not a reliable index of its importance. Some infrequently used learnings may be extremely important. The ability to operate fire extinguishers or apply artificial respiration may seldom, if ever, be used, but may be crucial if needed. Moreover, utility connotes much more than "practical" utilitarianism. The ability to paint or to understand music may have little practical value in economic terms or in the solution of everyday problems, yet be extremely "useful" or valuable in another sense, such as in making life more enjoyable, satisfying, or meaningful.

Mode. Four modes of using knowledge may be distinguished (Broudy et al, 1964). Knowledge may be used replicatively in the same form in which it is acquired and under very similar conditions. To be used in this way, performance capabilities must be "overlearned" to the point of routinization and cognitions must be available to instant recall. Examples are the spellings of words, the multiplication table, sight vocabulary in reading, the arithmetic operations, the forming and joining of letters in writing.

At the opposite extreme is the associative use of knowledge, in which things barely recalled, vaguely understood, or hesitantly performed never-

-theless prove useful in strange situations by providing some element of familiarity, some basis on which to proceed, some clue as to what it is all about. Further associations are reconstructed and the situation gradually takes on increased meaning, or at least enough of a hint is present to give direction to relearning or new learning. Allusions in conversations and writings are recognized, rather than being missed or causing bewilderment. Because knowledge can be used associatively to achieve some orientation in otherwise meaningless situations, the common complaint that "most of what is learned is soon forgotten" is specious. That which cannot be recalled may be recognized when encountered, and that which is not recognized can readily be relearned. It is better to have learned and forgot than not to have learned at all.

A third mode of using knowledge which is given particular emphasis by Broudy et al (1964) is the interpretive use. Before problems can be solved, they must be identified, and before they can be identified, the situations in which they may be present must be interpreted. The tools of interpretation are concepts and principles. By recognizing elements of a situation as exemplars of particular concepts and by identifying principles which entail those concepts, an individual is enabled to perceive the general nature of the problems presented by the situation, even if he is unable to solve them. Most individuals (and society collectively) must rely on specialists to solve all but the simplest problems, but knowing what problems exist, who is qualified to solve them, and what would constitute a satisfactory solution requires using knowledge interpretively.

Solving problems, on the other hand, requires what is usually meant by the application of knowledge. The applicative use of knowledge involves ability to determine, on the basis of appropriate principles, what procedures, tools, and materials are needed to solve a problem and the further ability to carry out those procedures with the appropriate tools and materials. Training programs for specialists emphasize the applicative use of learnings, whereas educational programs for generalists stress the interpretive use.

The answer to the central curriculum question, what knowledge is of most worth?, has therefore, many facets. Figure 7.1 summarizes some of the dimensions of utility that need to be considered. Whether one learning is more useful than another depends on for whom, for what, when, where, and in what way.

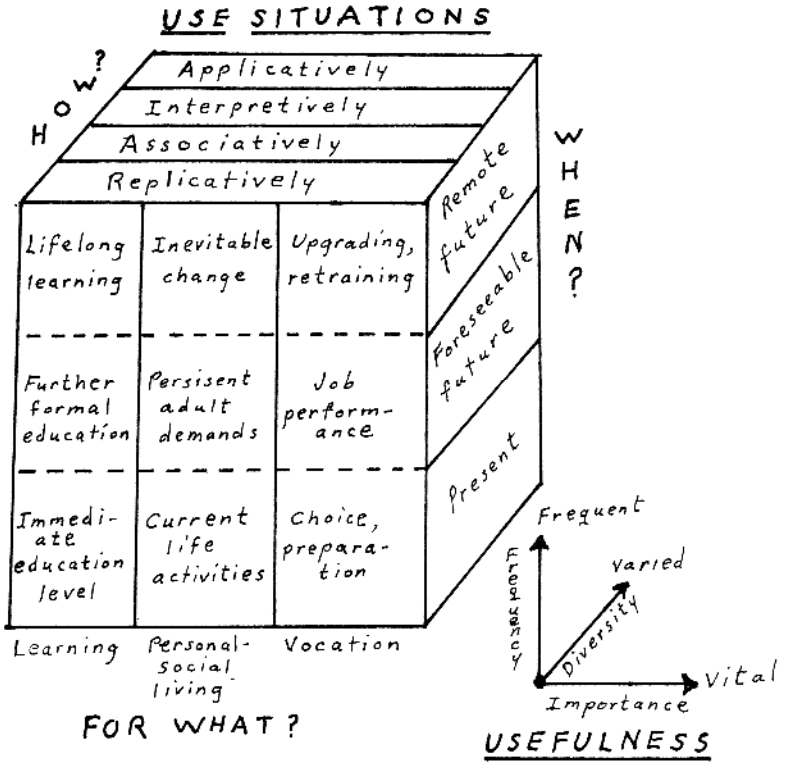


Figure 7.1. Usefulness of learnings depends on how, when, and for what they are used and on the frequency, importance, and diversity of use situations.

7.8 Macro Curricular Balance

Difficult as it may be to assign priorities to learnings at the micro curricular level, specialists in a given discipline or subject can, nevertheless, reach substantial agreement on what

concepts are most fundamental and what principles are most powerful. Similarly, specialists in particular occupations or enterprises concur reasonably well on what capabilities are called for in the greatest variety of situations, in the ones which are most critical, and in those which arise with the greatest frequency.

At the macro curricular level, however, it is almost impossible to agree on priorities because there are no accepted generalist authorities as there are within specializations. It is possible to reach reasonable consensus on the breadth of utility of various subjects, but among equally general subjects there is little basis for comparing their importance. The criterion of "balance" is therefore applied.

"Balance" is a vague, complex concept, difficult to apply as a criterion with any degree of objectivity or precision. It is violated when any one aspect or element is deemed to be over-emphasized to the neglect of other important aspects and elements. Balance might be sought between the practical and the theoretical, among Bloom's three domains of outcomes or the categories within a domain, among Phenix's six realms of meaning, among the traditional divisions of disciplines into humanities, social sciences, and natural sciences, among the 120 cells in Guilford's (1959) structure of intellect (see Figure 7.2), or among the major components of subject fields, e.g., language, literature, and composition; algebra, geometry, and analytics; physical, space, and life sciences, etc. Its importance, as well as its interpretation, as a criterion depends on broad institutional purposes. Different conceptions of balance apply in the elementary school program and a Ph.D. program, in a liberal arts college and a business college.

Curricula can vary along dimensions of breadth and depth. Excessive emphasis on breadth carries the danger of superficiality, whereas great depth may result in narrowness. Some kind of balance must be achieved between the two. Balance implies comprehensiveness, representativeness, and compromise.

Balance is not, however, to be construed as

equalization, either in the time allotted or the importance attached to various components or features. The constituents of a "well-balanced" diet

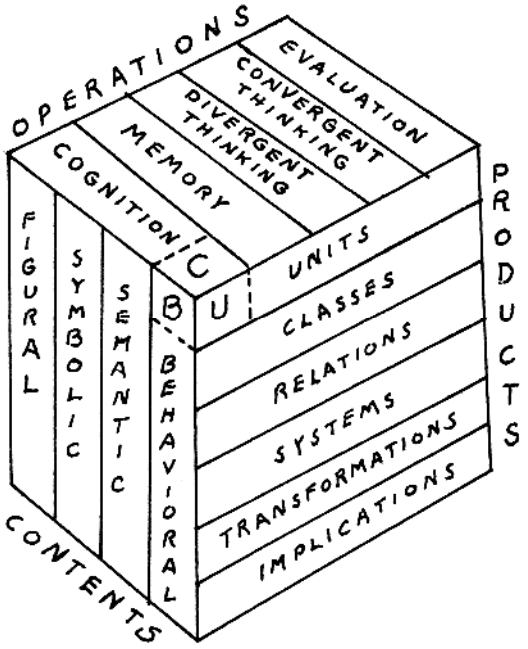


Figure 7.2. A cubical model representing the structure of intellect has 120 cells. (After Guilford, 1959.)

or meal do not occur in equal quantities. Omission or insufficiency of a component, rather than unequal attention, produces imbalance. Considerations of balance might, in certain circumstances, conflict with those of priority, but unless balance is equated with parity, the two are not inherently contradictory. The fact that a curriculum is balanced does not mean that all of its components must be considered to be of equal importance. An absence of priorities is just as possible in an imbalanced curriculm as in a balanced one.

7.9 Tradition and Advocacy

Curriculum development virtually always occurs in the context of an existing curriculum. Even in the case of a completely new institution or program, there is usually a pertinent precedent somewhere. The application of selection criteria may result in a decision to retain a current curriculum component or item, or to adopt an entire curriculum or component developed elsewhere. Continuing to teach what has traditionally been taught, without considering alternatives, itself represents an implicit curriculum decision; continuing to do so after rejecting alternatives represents an explicit decision.

When changes are considered, they are seldom, if ever, decided upon through a systematic application of selection criteria to one PLO after another in the vast pool of cultural content from which curriculum derives. If consideration is given to a curriculum change, it is almost inevitably because someone advocates a particular change. Selection criteria, therefore, need only be applied to the traditional content and the advocated replacement. The burden falls upon the advocates of change to demonstrate that the proposed curriculum content is feasible and that it is more desirable than that which it would supplant.

It is often the case that an addition, rather than a replacement, is advocated, but again the new curriculum content is sponsored, not sought, and the same two principal considerations of desirability and feasibility apply. When both student enrolment and instructional staffing are increasing, the addition of new curricular offerings can serve to provide a greater range of options. When curriculum proliferation outstrips growth in numbers of instructors and students, however, the result may be unacceptable increases in teaching load, or inefficiently small classes, or both.

Increased efficiency resulting from advances in instructional technology permits incrementation of curriculum within existing time frames. Unsatisfactory instructional results indicate a need to increase the allotted time, to improve technology,

or to decrease curriculum content. Elimination of curriculum components or items is rare, due to vested professional interests and to the potency of tradition. Traditional content which is no longer valid by contemporary standards, or which makes no discernible or even putative contribution to current educational goals should, presumably, be eliminated. The elimination of too much traditional curricular content, however, carries with it the risk of exacerbating a "generation gap" between parents and children or between veteran and entering members of a vocation. There is a place in most curricula for both the timeless and the timely. Content is not inferior merely because it is traditional, nor is it inviolable, although it does have the advantage of demonstrated feasibility.

7.10 Application of Selection Criteria

The circumstances under which curriculum decisions are made determine to a great extent which selection criteria are applicable and how they are applied. The selection process may be (1) at the macro or micro level, (2) in an analytic or synthetic mode, (3) close to or remote from the instruction situation, (4) for a narrowly or broadly defined population of learners, and (5) applied to specific proposed alternatives or a vast pool of PLO's. Whether more remote decisions are regarded as suggestions or mandates, the final result of curriculum selection is represented at the macro level by the actual offerings of an institution or program and at the micro level by the intentions of the instructor with respect to learning outcomes. When macro selection has previously occurred, micro selection is limited to the content of a particular macro category, and ' some selection criteria derive from the internal requirements of that category. Without prior macro selection, the micro selection process employs external criteria derived from a training goal and an analysis of a defined application situation.

In instances in which selection is directed toward a defined level, e.g., school grade, age or ability of learners, or occupational performance grade, the pool of PLO's is greatly restricted by the application of criteria pertaining to the maturational development of learners and the assumed

availability of prerequisite learnings ("entry behaviors"). When the level is either unspecified or extremely broad, these criteria are applied in a subsequent "grade placement" process as an aspect of curriculum organization, rather than selection. Nevertheless, the selection of any item or category implies the selection of any prerequisite that cannot be assumed to be available as an "entry behavior" on the part of those who are to be instructed.

Regardless of the selection circumstances, general criteria appear to be unavoidable:

Absolute Criteria

Sufficient

1. Prerequisite status: Is the proposed item or category essential to the learning of a previous selection in the same or another field?

Necessary

2. Validity: Is the proposed item or category valid in terms of contemporary scholarship or current accepted practice?

3. Feasibility: Are the necessary conditions for instruction of the proposed item available or obtainable, viz., time; learner qualifications; teacher competence; space, equipment, and materials?

Relative Criteria

4. Goal contribution: Which alternative appears likely to contribute more substantially to the achievement of one or more of the educational goals of the institution or program, or to the goal with the higher priority?

5. Power: Which alternative has the broadest explanatory power or generative value as a basis for further learning (Bruner, 1966) or for theoretical sophistication? (Scheffler, 1973)

6. Utility: Which alternative is perceived as having the greatest potential for replicative, associative,

interpretive, or applicative use in the societally or individually most significant or most frequently occurring situations likely to be encountered in further education or the present and future life of learners?

7. Balance: Which alternative will contribute most to improving curricular balance with respect to subject areas, realms of meaning, or types of learning outcome?

8. Economy: which alternative provides maximum generalizability and transfer value with minimum resources and teaching and learning effort? (Scheffler, 1973; Bruner, 1966)

other criteria have been suggested, some of which may be considered appropriate in a particular selection context:

- Inherent interest of topic (Bruner, 1960) or contribution to a sense of delight (Bruner, 1962)
- Expressed student interest or demand
- Representative of key ideas or exemplifying mode of inquiry of a discipline (Phenix, 1964b)
- Demands of higher education institutions
- Societal (public) demand
- Familiarity in ordinary life situations
- Potential for arousing imagination (unfamiliarity in ordinary life situations) (Phenix, (1964b)
- Consistency with man's essential nature as symboliser (King and Brownell, 1965)
- Idealistic with respect to man as he could be rather than is (King and Brownell, 1965)
- Requiring organized instruction by well-educated instructor.

Chapter 8: Curriculum Structuring

8.1 Significance of Structure
8.2 Cognitive, Disciplinary, and Curricular Structure
8.3 Order and Placement
8.4 Logical and Psychological orders
8.5 Organizational Categories
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8.7 Determination of Macro Curricular Categories
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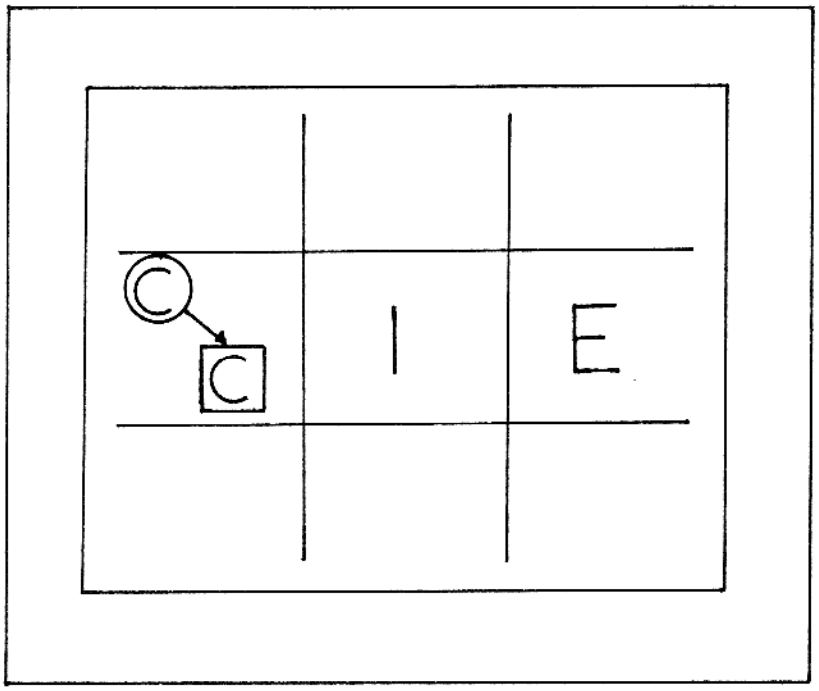

Chapter 8

CURRICULUM STRUCTURING

8.1 Significance of Structure

If selection, the first of the two aspects of curriculum development, derives its significance primarily from the fact that time is limited, the second aspect, structuring, derives its from the fact that time is linear. Instruction is episodic, and while two, or even several, learning outcomes can be fostered simultaneously, curriculum categories and items must for the most part be treated consecutively rather than concurrently. At some point, therefore, either during instructional planning or prior to it, a temporal order must be established for ILO's.

In itself this temporal imperative could be met through a random ordering of items and categories. For many curricular elements and components, order of instruction is indeed a matter of indifference. But for many others order is significant, and it would seem unlikely that on the whole anything as important as a curriculum could satisfactorily be left essentially formless except for the effects of chance. Indeed, the terms "organization" and "design," which are commonly employed in connection with curriculum, suggest that something more elaborate than the mere ordering of the content is involved in structuring.

Although the structuring of curriculum facilitates both the planning and the administration of an instructional program and also permits a division of labor in curriculum development itself, its greatest significance lies in its relation to learning. The importance of structure for the retention of learned material has been well established through experiments in which learners were found to impose a structure on nonsense syllables in memorizing them. Bruner (1960) has argued that structure also facilitates comprehension and transfer of learning. Gestalt psychological

theory supports the contention that the configuration of a "whole" gives added meaning to "parts" and thereby aids understanding or comprehension. The case for transfer is not so clear, since learnings acquired in one structural context can become so firmly associated with that organization that they are resistant to application in another context, unless special pains are taken to promote such transfer.

Gagne (1967) has pointed out that there are "hierarchies of knowledge" in which the lower order elements are prerequisite to the learning of higher ones. Since a given item might appear in a number of different hierarchies, the point is not that it can only be learned in a particular structure, but that it usually must be learned in some structure. The merits of any structure depend in part on certain characteristics of the learner and the use to which the learning outcome is to be put. There is, however, little value in accumulating a random assortment of unrelated facts, and such an arbitrary structure as an alphabetical list of concepts to be learned seems ludicrous. Therefore, it seems reasonable to conclude that some structure is desirable, if not essential, and that it makes a difference which structure is adopted.

If A and B are selected for inclusion in a curriculum, they must either be learned independently or in association with each other. If learned in association with each other, an additional learning may occur, namely, the relation between A and B (A r B), which may or may not be intended to be learned, i.e., curricular. But whether A and B are to be learned in association with each other or independently, either A or B must be learned first and the other second. The order may, in fact, not matter. If it does not, then the curriculum developer can leave it to the instructional planner to decide, arbitrarily or on some rational grounds. But if there is some sound reason why A or B should be taught first, the curriculum developer has the obligation to advise the instructional planner so that the order will not be left to chance.

Moreover, though A may be learned before or after and in isolation from B, it may well be

desirable that A be learned in association with C and, indeed, essential when the curriculum includes the A-C relationship (A r C). In this case, the order of A with respect to B is determined by any order requirements existing between C and B. Thus, if B must precede C, either B---A-C or B---C-A would fulfill the two conditions, but the order requirement would be violated by A-C---B and C-A---B, the wrong relationship would be developed by A---B-C, A-B---C, B-C---A, and B-A---C, and neither structuring criterion would be satisfied by A---C-B, C---A-B, C---B-A, or C-B---A. Since curriculum structure involves both order and relationship, it can affect what will be learned as well as whether, and how efficiently, it will be learned.

8.2 Cognitive, Disciplinary, and Curricular Structure

The structure of a curriculum bears some relationship to two other structures, one associated with individual learners, the other with the culture. Cognitive psychologists postulate a structuring process by which each individual organizes his perceptions and the information he receives from his environment through his experiences. The resulting idiosyncratic cognitive structure, in turn, affects his perception and, hence, his learning (Tyson and Carroll, 1970). It provides "subsumers" (Ausubel, 1963) which permit the ready "assimilation" of new information.

It is assumed that each instance of physical or logical-mathematical experience constitutes an external disturbance which calls for active compensation on the part of the individual in order to restore equilibrium. This self-regulatory process, called "equilibration," involves the integration of new perceptions with an existing mental structure so that they "make sense" or have "meaning." When the new item of experience is incompatible with the prior ideational structure, a form of "cognitive dissonance" results (Festinger, 1957).

Whenever "equilibration" cannot occur through "assimilation," the existing structure must itself be modified to permit "accommodation" of the new cognitive material (Piaget, 1958; Rockcastle and Ripple, 1964). By these two processes, learning

takes place, and the change in structure over time is cognitive development. An individual's cognitive structure has been likened to a "map" consisting of a network of facts and concepts linked by analytic and contingent (empirical) propositions. It may also be useful to postulate an "evaluative map" made up of valuative concepts, attitudes, and various moral, prescriptive, and effectiveness norms (Broudy et al., 1964).

Through learning and the integration of learnings which characterizes development, the individual's cognitive structure increasingly comes to resemble culturally accepted structures. Prominent among these structures are those of the disciplines of knowledge, which Bruner (1960) advocated as the basis for curriculum organization, not only to enhance comprehension, retention, and transfer, but also to reduce the lag between scholarly advances and the curriculum. Various sub-cultural groups other than scholars also have characteristic ways of viewing reality, and these schemata (Parry, 1967), acquired early by the young, have a selective influence on perception and interfere with inter-group communication, e.g., between socioeconomic classes. These parochial structures, while potent, are presumably less valid than those of the disciplines.

Dewey (1938) suggested a "progressive organization of subject matter," through which the curriculum's structure would facilitate the gradual evolution of learners' subjective cognitive structures toward conformity with the more objective disciplined structures held by educated adults. The dangers to be avoided in mediating between these two structures are, on the one hand, introducing a mature structure too rapidly, thereby losing touch with individual cognitive structures, and on the other hand, underestimating the learners' capacities for achieving more mature structures, thereby depriving them of powerful tools for continuing learning.

8.3 Order and Placement

The order in which ILO's are arranged bears some relation to their placement in the curriculum, but order and placement are two distinct concepts.

Two identical curriculum structures can be placed to begin at different maturity levels, or to begin at the same time and extend over different lengths of time, or both. Item A still precedes item B whether A is taught one day and B the next, or B is not taught until five months after A. Similarly, course A still precedes course B, whether A is placed at the fourth grade level and B at the fifth, or A is at grade two and B at grade 12. In a "continuous progress" or "non-graded" instructional system, placement may differ for every individual, yet the curriculum sequence might be the same for all. Variable timing within a relatively invariant sequence is a common feature in human development.

The graded system, which was apparently introduced into American elementary schools from Prussia early in the nineteenth century, has so greatly dominated curriculum development that the process almost always takes place in the context of one or more specified, but ill-defined, "grade" levels. These levels are in effect defined in terms of the modal ages of learners. Depending upon promotion practices, the chronological age variance associated with a "grade" may be relatively small and the mental age and achievement level variance great, or the latter variance may be small and age variance great. In an ungraded context, curriculum development can be concerned only with order, leaving placement to be determined by individual learning progress or by instructional planning. Typically, however, curricula must be designed for "Seventh Grade English," "Tenth Grade mathematics," and other vague or meaningless categories.

8.4 Logical and Psychological Orders

A long standing and essentially spurious controversy concerns the relative merits of a logical and a psychological organization of curriculum. McClellan (1961) has demonstrated that these are not bipolar concepts. What may be considered "psychologically" appropriate must be logical from some standpoint. It is difficult to see how the "illogical" can be psychologically appropriate. As Piaget (1958) has shown, children's "logic" or pattern of thinking progresses through develop

mental stages from pre-operational symbolic representation through concrete operations on classes, relations, and numbers to the formal hypothetic-deductive operations associated with categorical and conditional reasoning.

Organization is considered "psychological" if it is determined by the learner himself or corresponds to an analysis of children's developmental experiences, interests, needs, or tasks. It is embodied in the cliché, "Start where the learner is." There is, of course, no other place to start instruction. Determining just where each learner is constitutes a major instructional problem. Curriculum developers must assume where he is, i.e., his "entry behaviors." But, then, the question is where one can logically go from there, so that the learner does not remain where he starts.

Psychological factors, including level of development and other personological variables, obviously have a bearing on the placement of curricular categories and items. But development depends on previous learning as well as on maturation. "Readiness" is not a state which must simply be awaited; within limits set by maturation, it is a state that can be created by the proper ordering of learnings and the experiences through which they are achieved. There is undoubtedly no single best order. Any order is proper that recognizes the existing state of learners' cognitive structures, the mature structures toward which development is intended to proceed, and logical dependencies intervening between them. Continuous cognitive restructuring is to be expected, and the logic of the curriculum design can facilitate or hinder this psychological inevitability.

8.5 Organizational Categories

Specific micro curricular items are typically organized into macro curricular categories at several levels. Macro curricular terminology is not well standardized. Even the term "curriculum" itself is used variously to refer to (1) a student's program of studies, (2) the totality of art institution's course offerings, and, (3) prefaced by an adjective such as "academic," "general," or "commercial," a major sub-set of those

offerings pursued by defined groups of students in furtherance of differing educational goals. The last-named sub-sets are also called "courses," e.g., the "business course," a term usually reserved for single offerings, rather than sets of them. But "course" is also often interchanged with "subject," sometimes being subordinate to subject and sometimes supraordinate. Thus, "course" is used variously to mean (1) a sub-set of curricular offerings, as above, (2) a particular offering under a subject, and (3) a category consisting of a number of "subjects." A "subject" is usually a sub-ordinate of a "field," but sometimes the two are used synonymously. As used here, the field of mathematics contains the subject, algebra, which includes the course, intermediate algebra. A subset of an institution's total offerings, comprising courses in various subjects in one or more fields and labeled with an adjective indicative of goals, is here called a "nominal curriculum." Examples of nominal curricula, in addition to those given above (academic, general, commercial), are "liberal arts," "pre-med," "vocational," and "teacher education."

The course is the fundamental macro curricular category in that it is ordinarily the category of record. It consists in a set of intended learning outcomes, the attainment of which (1) requires an extended period of time (usually a whole or half year) and (2) is customarily officially recorded as "credit" in the form of Carnegie units, semester-hours, and the like. The aggregate of all courses taught in an institution is usually termed its "course offerings," the curriculum of any one of them being a "course of study."

When a course is offered, it may be required of all, some, or none of the students attending the institution. Courses required of all students are called "constants," those required of some are often called (nominal) "curriculum constants," and those which are not required of anyone are known as "electives." A "limited elective" is a course option within a defined set of alternatives, usually identified with a "nominal curriculum" (as a curriculum "variable"), with a "school grade" or "college year," or with a particular "major" or "minor" specialization. A "free elective" is a course option

available from the full range of "course offerings" if prerequisites are met.

An institution is said to have a "single curriculum" if all of its course offerings are constants. It has a "multiple curriculum" if "nominal curricula" are designated. If neither of these conditions obtains, the institution has either a "constants-with-electives curriculum" or an entirely "elective curriculum." Under any one of these four types of curriculum, a student has a "program of studies" consisting of a number of "courses" determined in accordance with the rules for the type.

A "nominal curriculum" may consist of constants, limited electives, or free electives, or any combination of these. In the education context, it is almost always synthesized from identified course categories, whether or not the micro curricular composition of the courses has previously been determined through analysis. In the training context, the micro curricular composition of the "nominal curriculum" is often determined first, and the courses synthesized from these micro curricular elements.

"Units" of a course can similarly be defined synthetically or analytically. If the micro curricular elements of a course have been identified, they can be synthesized into units. Alternatively, a course can be analyzed into units and these in turn analyzed into component topics and micro curricular elements. Courses bearing a particular label are usually more or less similar, but seldom identical. To be identical, two courses would have to (1) contain the same micro curricular elements, (2) arranged into the same units, (3) with the same internal organization, and (4) with the units in the same order. Two courses with the same label sometimes differ substantially, raising the question of the usefulness of their common title. By the same token, highly similar courses sometimes go by different names, suggesting the desirability of standardization of nomenclature. (See Figure 8.1 for illustrations of the terminology used here.)

Macro Curricular Category	**Example 1**	**Example 2**
"Nominal" curriculum	College-preparatory	Pre-law
Field	Mathematics	English
Subject	Algebra	Literature
Course	Intermediate algebra	Survey of British literature
Unit	Complex numbers	Poetry
Topic	Multiplication of complex numbers	Sonnets

Figure 8.1. Illustrations of macro curricular categories.

8.6 Three Aspects of Structure

The structuring of curriculum has three distinguishable aspects: (1) the grouping of items and sub-categories into macro curricular categories, (2) the diachronic (across time) arrangement of items, categories, and sub-categories, and (3) the synchronic (concurrent) arrangement of categories. Although instruction within a course proceeds linearly through consecutive episodes, the common practice of scheduling learners for instruction in a number of different interspersed courses, over a period of weeks or months, produces an apparent simultaneity at the macro level. This is the synchronic dimension, represented by courses at the same placement level, whereas the diachronic dimension is represented by courses at successive levels. These curriculum dimensions are frequently referred to in spatial terms as respectively, horizontal and vertical, although as often as not, scope and sequence charts represent the diachronic horizontally and the synchronic vertically, instead of the other way around.

Posner (1974) has identified commonality and temporality as two dimensions of the form of curriculum structure. The commonality dimension ranges along a continuum from repetition, e.g., A-A, through logical relation, e.g., A-A', to independence, e.g., A-B, where the letters represent two curriculum elements (items). The temporality

factor is represented by vertical, horizontal, and hierarchical relationships, with adjoining and non-adjoining alternatives under the first and third.

The structuring problem of category composition is closely related to the selection process and takes different forms depending on whether an analytic or synthetic approach is adopted. Under analysis, choices are made initially of vaguely defined but generally recognized categories, which are then successively refined by the designation of sub-categories and finally by the selection of specific curriculum items. Under synthesis, individual ILO's are selected initially according to appropriate selection criteria and then grouped into suitable categories which are in turn grouped into higher-order categories. More specifically, analysis proceeds from courses to units to topics to items, whereas synthesis clusters items into topics, topics into units, and units into courses.

In occupational curriculum development, the synthetic approach ordinarily begins with a job analysis in which various tasks are identified and grouped into related "factors" (families), if possible, or treated as "isolets." This clustering of tasks and assigning them to levels are part of the curriculum structuring process (Gullion and Gilpatrick, 1973). Knowledge (cognitions) that must be consciously applied in a task and that represents sufficient learning effort can be classified on a disciplinary basis and structured as curriculum using established categories.

8.7 Determination of Macro Curricular Categories

Most collections can be organized in a number of ways. A set of physical objects can be divided into sub-sets on the basis of volume, weight, color, shape, age, function, composition, quality, etc. Sub-sets formed on one basis can be further divided into sub-sets based on the same or another characteristic and these in turn can be subdivided successively until the item level is reached. The bases that are selected to define sets and sub-sets and the number of classificatory levels used depend upon the nature of the material and the purposes for which it is to be classified.

No general rules for the organization of curriculum content are possible, therefore, except that rational structuring requires (1) awareness of the nature of the content and the purposes for structuring it, (2) consistency in the application of whatever classificatory basis is adopted in a given situation, and (3) attention to the unity or integrity of the resulting categories.

The substantive nature of the content is defined by the prior classification of its source into various disciplines and human enterprises, including occupations. The bases for organizing educational curricula, in which the integrity of disciplinary structure may be considered important, differ, therefore, from those for training curricula, in which the integrity of the application situation may be deemed more significant. The bases on which scientific content is appropriately classified are different from those suitable for historical, literary, mathematical, linguistic, or aesthetic content. Moreover, when one basis has been adopted for the definition of courses, another may be used to define units within the courses, and still another for the identification of topics within units.

Courses may be formed from content derived from (1) a single branch of a discipline, (2) two or more branches of a single discipline, (3) two or more disciplines in the same field, or (4) two more fields. Thus, a course may (1) be restricted to literature or composition, botany or zoology, algebra or geometry, 18th century American intellectual history or 19th century European political history; (2) combine content from literature and composition as "English," from botany and zoology (as biology), from both algebra and analytic geometry, from both intellectual and political history, both American and European, or both 18th and 19th centuries; (3) broaden further to include physical, chemical, and biological aspects of natural phenomena (as "general science"), or historical, geographical, sociological, and economic aspects of social phenomena (as "social studies"); or (4) incorporate literary, historical, and philosophical content (as "American studies") or material from science and mathematics or from English and social studies (as "unified studies" or a "core" course). Curricular

integrity in the diachronic dimension is presumably promoted by homogeneity of courses, whereas synchronic integration, i.e., the interrelatedness of all knowledge, is enhanced by more heterogeneous course composition.

Courses can be divided into "units" and topics on a variety of bases, depending upon their homogeneity and the substantive nature of their content. The more homogeneous the category, the more clearly identifiable are the alternative organizational bases appropriate to the subject matter. Moreover, when there is homogeneity, specialists in the particular subject matters are available to decide or advise on which alternatives best preserve the integrity of their specializations and promote the most desirable emphasis. In the same subject, different emphases may be appropriate for general education and for the preparation of potential specialists. Similarly, which categorizing basis is selected may depend upon the age or educational level of the learners. A course, such as American history, may be organized by time periods at one level, according to such societal functions as transportation, agriculture, and trade at another level, and at still another by concepts, such as nationalism, federalism, and populism.

Courses that derive their content from more than one branch of a discipline, from more than one discipline in a field, or from more than one field have been organized in a number of ways, with varying degrees of coherence. They may be (1) divided into several relatively discrete homogeneous parts, e.g., successive physics, chemistry, and biology segments in a "general science" course; (2) organized according to one of the sources only, e.g., "unified studies" structured as a series of social studies units, with English literature and composition taught in connection with each of them; (3) structured in accordance with some conceptual theme that recurs in a number of disciplines, e.g., causality, authoritarianism, romanticism, or equilibrium; or (4) arranged as a series of problems or application situations having some feature in common and involving data, procedures, and propositions from a variety of subject matters, e.g., international, urban, environmental, or youth problems, or situations arising in family living, inter

group relations, or vocational life.

Since the distinction between curriculum and instruction is not carefully observed in the literature of education, discussions of curriculum organization or design usually deal extensively with the organization of learning experiences, a topic which is an aspect of instructional planning. In these discussions the term "organizing centers" often appears (Goodlad and Richter, 1966; Herrick and Tyler, 1950; Herrick, in McDonald et al., 1965). From such examples of suitable "centers" (Herrick, 1965) as materials, displays, collections, exhibits, places, people, and ideas, the instructional orientation of the term, "center," is clear, since only the last example (ideas) has curricular significance.

Similar confusion surrounds such classifications as "activity curriculum" and "experience (or emergent) curriculum" (Smith et al., 1957; Inlow, 1973). The determination of activities in which learners are to engage is a function of instructional planning that rationally must be based on an awareness of the learning outcomes intended to be achieved through the activities. To decide upon the activities first and then to determine what can be learned through them is a reversal of the rational order, at least with respect to curriculum selection. If, however, the activities are chosen as appropriate for the learning of a set of previously selected curriculum items and all items in the set are provided for, then the activities do provide a basis for organizing the curriculum category defined by the set of items.

In the so-called "experience" curriculum, on the other hand, neither learning activities nor intended outcomes are determined in advance of the instruction process itself. Both decisions are made extemporaneously in accordance with the contingencies of an immediate or emergent situation. Since the ensuing relationships among the learnings which actually result are fortuitous and a posteriori, there cannot be said to be any deliberate curriculum organization process involved. The argument advanced for the elimination of this process is that the structure resulting from following the interests, needs, and problems arising out of the

learners' own experiences in the course of development is more appropriate than any that could be devised in advance. The argument overlooks or minimizes the diversity of experiences among individuals and the possibilities of providing experiences that are more productive of valued learnings than those which chance to arise.

If "activity" and "experience" curricula are excluded as inapplicable to the structuring aspect of curriculum development, four basic approaches remain for the definition and sub-division of courses:

(1) Separate subjects or disciplines

(2) Broad fields (correlated, integrated, unified, fused, "general," "survey")

(3) Societal (social functions of living, persistent life situations)

(4) Student-centered (identified needs, problems, interests, developmental tasks)

The term "core curriculum" has been used in a variety of ways but it does not refer to a particular curriculum design so much as to an administrative plan for the provision o~ common learnings (Saylor and Alexander, 1957). A core curriculum may be "structured," along any of the four bases identified above, or "unstructured," as in the so-called "activity" and "experience" curricula (Alberty, 1953; Wright, 1952).

Depending on the subject matter and the general structuring approach adopted, some theme, strand, or thread must be selected to provide for the unity or integrity of the categories adopted. Commonly used unifying bases include time, location, structure, function, process, and operation. Categories based on time include centuries, decades, eras, epochs, ages, periods, reigns, and administrations. Location references, such as celestial, terrestrial, oriental, occidental, hemispheres, continents, countries, regions, states, and localities, may pertain to phenomena, events, literary settings, origins of artists, and the like. Structural categories are parts of entities

such as organisms, works of art, machines, or governments, or of typologies of structures, such as literary genres, biological genera, or "schools," as in painting, psychology, and philosophy. Structural entities and parts can be grouped on the basis of functions performed, e.g., digestion, legislation, distribution, etc.; similarly, various stages can be differentiated in processes, such as mitosis, acculturation, and human development, and in operations, e.g., the solution of a type of problem or the production of some thing, can be divided into steps.

one of the more thoughtful and imaginative proposals for organizing a total secondary-school program devoted to general education grouped courses into five large categories, each with a different structuring basis (Broudy et al, 1964). The first category, "symbolic skills," emphasized basic processes of thinking, communication, and expression, e.g., language, mathematics, artistic, bodily movement. The second included the "basic sciences," stressing concept development. Three sets or series of "developmental studies," titled cosmos, social, and culture, were to deal respectively with the evolution of man and the universe, of political institutions, and of technology, arts, economics, and ideologies, reflecting an organization based both on temporality and aspects of human environment and accomplishment. Another novel category, "aesthetic studies," focused on distinctive life styles throughout history, as revealed in outstanding works (value exemplars) manifesting dominant aesthetic values of the times. The final category provided for "molar problem solving," involving the analysis of selected contemporary problems, after the fashion of the more innovative forms of "core curriculum."

8.8 Diachronic Structure

Whatever macro curricular categories are formed on whatever bases, they must be arranged in some sequence for purposes of instruction. It is possible to arrange "n" categories in n! different sequences. In other words, if a course is organized into ten units, there are more than 3.6 million different ways in which those units can be ordered. Some of these orders may be unsuitable,

if not ridiculous. A large number may be equally acceptable. Whatever the case, the instructional planner needs to know which are preferable or at least satisfactory, and the curriculum developer may be able to provide such information.

In some subject matters, especially those involving the development of related concepts or complex performance capabilities, prerequisites exist which furnish an inherent basis for sequence. A hierarchical analysis of a given cognition or performance reveals the component cognitions and performances upon which it is immediately dependent, and further analysis of each of these indicates their prerequisites, which in turn can be analyzed to successive levels, until only items that can be presumed to be known appear (Gagne, 1967). The hierarchical configuration does not prescribe a single order, but serves as a basis for testing whether a particular order is suitable. Although items at lower levels must be learned before those in a direct line at higher levels, there is no restriction on the ordering of items at the same level, on the ordering of items not in a direct line, or on the time elapsing between the learning of an item and its prerequisites. Once a particular sequence has been chosen, however, it can be empirically validated by administering a test with two items from each category to individuals who have been instructed in all of them and determining what percent of those "passing" a given category also passed each of the others (Gagne, 1967). The appropriate order of categories is that in which a somewhat smaller proportion passes each succeeding category. If significant numbers can pass a category without passing the preceding one, then the latter is not prerequisite to the former. In each curriculum development situation, every item in a hierarchy or subsumptive relationship (Ausubel, 1963) must either be included as an intended learning outcome or be classified as an "entry behavior" required for acceptance of the learner into the instructional program for which the curriculum is being designed. The term "enabling objective" is sometimes applied to items which must be learned in the course of achieving a "terminal objective" of presumably greater significance. Since the "enabling" items are to be learned and are not merely instrumental content,

they are curricular.

In addition to vertical structures in which there is a single best sequence and the pyramidal hierarchical structures, Briggs (1968) identified a flat structure, in which order can be random; an adjunct or mixed structure, in which there are hierarchies within categories but a flat relationship among categories; and a flat-spiral structure, in which order is unimportant except for recurrence of topics at successively higher levels of complexity. (See Figure 8.2.) Whenever there is no in-

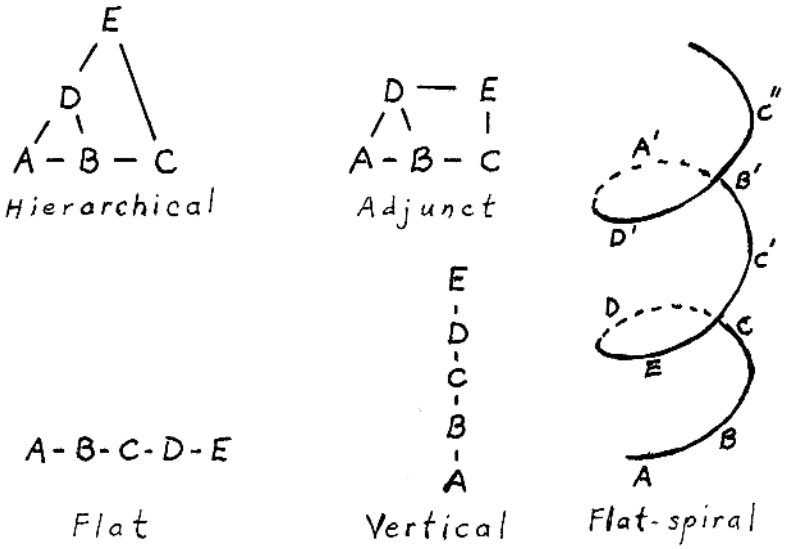

Figure 8.2. Curriculum items and categories may be structured into various patterns.

herent sequence based on prerequisites, continuity can be enhanced by arranging categories on the basis of some theme, e.g., "function" or "group" in algebra. A maximal continuing theme (Schrader, 1972) is one that is present in every sub-category within a given macro curricular category. Such a theme does not necessarily impose any sequencing requirements. A partial continuing theme, which is

present in two or more sub-categories, imposes the sequence requirement that these subcategories be consecutive.

Some unifying themes which form the basis on which categories are established may demand or suggest a particular sequence. For example, whenever categories are based on time periods, process stages, or operational steps, a chronological order is inherent; when location is the basis, there is a proximity-remoteness continuum; structures and functions may involve gradation in complexity or familiarity. When the learners for whom the curriculum is being designed are immature, developmental characteristics, such as the intellectual stages identified by Piaget may give gross sequencing guidance, i.e., concrete operations before formal hypothetical operations. The spirality notion (Bruner, 1960) provides for the revisitation of the same topic at various developmental levels.

Posner and Strike (1976) have identified five major types of sequencing alternatives, with illustrative sub types:

1.0 World related-- reflecting empirical relationships among phenomena

- 1.1 Space, e.g., closest to farthest, bottom to top, east to west, etc.
- 1.2 Time, e.g., earliest to most recent, cause to effect, etc.
- 1.3 Physical attributes, e.g., order of size, age, shape, etc.

2.0 Concept-related-- reflecting conceptual (logical) relationships

- 2.1 Class relations, e.g., superordinate-subordinate
- 2.2 Propositional relations, e.g., evidence-proposition, theory-facts, microlaws-macrolaws, etc.
- 2.3 Sophistication, e.g., complexity, abstractness, clarity, range, refinement, etc.
- 2.4 Logical prerequisites, i.e., necessary prior understandings

3.0 Inquiry-related-- syntax of knowledge generation and verification

- 3.1 Logic of inquiry, e.g., inductive, hypothetico-deductive, etc.
- 3.2 Empirics of inquiry, i.e., pragmatic efficacy of procedures and conditions

4.0 Learning-related-- psychological principles

- 4.1 Empirical prerequisite, i.e., research-supported order
- 4.2 Familiarity, i.e., previously encountered to strangely novel
- 4.3 Difficulty, e.g., discrimination, speed, extensiveness, etc.
- 4.4 Interest, i.e., to learner
- 4.5 Development, i.e., accord with "stages"

Practical considerations may dictate order, sometimes even contravening theoretical preferences. An ability such as reading must be taught earlier than its complexity warrants because it is so necessary for other learnings. In vocational training, abilities needed for job entry are often taught first, regardless of other considerations. Some curricular content which might appropriately be taught in elementary schools may be delayed because necessary facilities are only available at a higher school level.

8.9 Synchronic Structure

Unity or integrity of macro curricular categories and diachronic continuity among them contribute to curricular coherence. It is sometimes possible to add further to coherence through synchronic co-ordination, i.e., by scheduling parallel to each other courses designed to complement each other in some way. The simplest arrangement involves two courses, e.g., American history and American literature, carefully ordered to bring about parallel treatment of closely related topics. A more complex and rare synchronic design entails an effort to relate all courses placed at a given level to some coordinating theme, e.g., internationalism or recreation. Difficulties both in synchronizing two courses and in finding a theme

suitable for a diversity of courses without doing violence to the integrity of each. Moreover, in any instructional program that provides for mastery learning or individualized pacing in an ungraded format, any such co-ordination is quite impossible.

The coherence sought through synchronic curricular co-ordination can also be promoted instructionally by taking advantage of numerous opportunities to correlate each course with others with which it has cognitive affinity or mutual application of skills. Another approach is the actual integration of courses, through fusions or organization by problems or functions. Here again, however, the resulting heterogeneity brings into conflict efforts to bring about coherence through synchronic co-ordination on the one hand and through categorical unity and diachronic continuity on the other.

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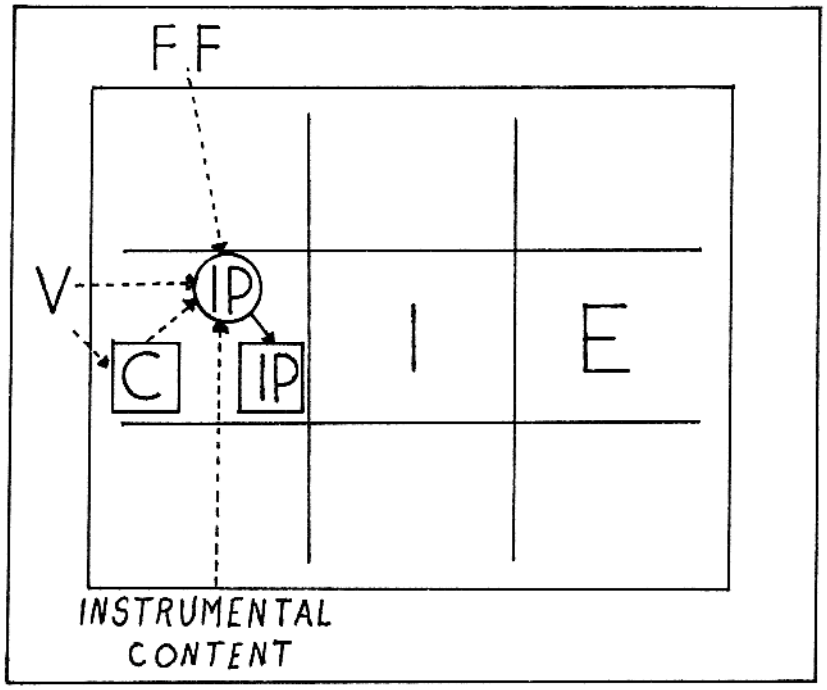


Chapter 9

INSTRUCTIONAL PLANNING

9.1 Product Plans and Process Planning

Instruction is the productive process in education. It yields products at two levels. The most immediate products are learnings or learning outcomes (L) the consequences of the learning process, $\overline{L}$. These are integrated over time, through the process of "development" ($\overline{D}$), into those characteristics or traits of the educand which are called, for lack of a better term, simply the educational results (R) of the program or institution.

The educational planning considered to this point has concerned the advance specification of the products of instruction. The setting of educational goals (G) anticipates the educational results (R) to be achieved through instruction. The development of curriculum (C) anticipates the learning outcomes (L) to be achieved through instruction and gives some guidance concerning necessary or desired relationships among them.

Instructional planning is concerned with the selection or invention of a process that will effectively produce the anticipated products. A process plan specifies a series of procedural steps or actions to be taken, together with the materials to be used or the content to be acted upon. Since an enormous number of actions are possible and numerous materials are available or could be developed, the decisions to be made in instructional planning are impossible without a clear idea of the intended product. A curriculum (C) is, therefore, an essential input into instructional planning ($\overline{IP}$), and while it is possible for instruction to proceed without knowledge of goals (G), awareness of the intended R is valuable for two reasons.

First, only if G is known can instruction be planned such that the integration of L into R is facilitated. Second, the best laid plans often, if

not usually, must be revised to some extent in the course of their implementation, because it is impossible to anticipate all contingencies in advance, especially where human behavior is involved. Adaptation of plans to such exigencies is greatly facilitated by an understanding of why a particular product is being sought, i.e., for what purpose a learning outcome is desired, what G an item of C is intended to serve. Thus, it is not only to be expected that an instructor will modify the IP during instruction but also that he may find it necessary to revise the C, i.e., what is intended to be learned, as well as how things are to be learned. Whatever may have been the intentions of "curriculum developers" in drafting curriculum documents or the interpretations of those intentions on the part of "instructional planners" in translating them into instructional plans, the only curriculum that is ever implemented is that set of intentions held by the instructor in the instructional process. Part of that process involves inducing the learner to adopt the intention to learn the same things the instructor intends to be learned.

9.2 Frame Factors and Instructional Planning

The various contextual characteristics within which educational planning, implementation, and evaluation occur, designated "frame factors" in Chapter 3, have their greatest impact upon the instruction process and, hence, more imperatively demand attention in instructional planning than in either of the preceding product planning stages. Curriculum development sometimes takes place in ignorance of the specific frame factors that will be present in the instructional situation. Often they are unpredictable, occasionally curriculum developers carelessly overlook them. In any event, it is not necessary at that stage to anticipate exactly either the instructional context or methods. The only obligation is to avoid stipulating intended outcomes the achievement of which presumes frame factors or procedures which cannot realistically be expected to obtain. It is the instructional planner who must take the actual specific frame factors into account and design instructional procedures that can be expected to realize the intentions within that context.

A survey of the frame factors depicted in Figure 3.2 will serve as a reminder of the kinds of contextual concerns that cannot be overlooked in instructional planning. Comments under each will illustrate how various decisions are affected.

Higher-order Frame Factors

1. Rule system. A state or district rule that prohibits any selective grouping of learners, or the assigning of "home work," or the participation of students in learning activities not under the direct supervision of a teacher makes impossible certain instructional procedures and makes others necessary. Rules may also reflect societal values with respect to the kind of personal interaction with learners that is permitted or preferred.

2. Quantitative-qualitative demands. For the most part such demands affect instruction indirectly through their influence on the curriculum to be taught, but external qualitative demands for specified levels of achievement directly affect the instructional time and techniques necessary to meet such standards.

3. Economic resources. The economic resources a society or community is able and willing to commit to education determines class size, the availability of materials, the sophistication of equipment, the level of teacher training, and the extent of supervisory assistance, all of which influence the kind of instruction that can be planned.

Proximal Frame Factors

1. Natural

    1.1 Time. Learning takes time; instruction proceeds through time; instructional planning requires the allocation of time to various activities. One of the main purposes of instructional planning is to maximize the learning that occurs in a given period of time. If a given

learner requires a particular length of time to learn something, providing less than the needed time may be a complete waste of time, as nothing may be learned. The procedures selected for instruction depend to a great extent on the time available, e.g., when time does not permit an inductive approach, a deductive approach will be selected, even if not preferred (Lundgren, 1972).

1.2 Physical. The geographical location and characteristics of the site of instruction make certain materials available and certain activities feasible, while making others unavailable or impossible. Spatial limitations of the classroom or larger environment make certain activities difficult, if not impossible. The presence, quantity, and quality of physical equipment are crucial to certain kinds of instruction. Instructional planning involves capitalizing on what is available and improvising to compensate for what is not.

2. Cultural

2.1 Organizational. The presence or absence of a graded or non-graded organization, of random or selective grouping, of rigid or flexible time schedules, and of departmentalization or self-contained classrooms determine the variety of activities that must be planned, their duration, their complexity, and the extent to which the pace of carrying them out can vary.

2.2 Personal. After the curriculum, the most important determinant of instruction is probably the characteristics of the specific learners, individually and collectively, to be instructed. Which characteristics are most important and which features of instruction should be adapted to them are matters of uncertainty and controversy, although matur

ity is generally conceded to be relevant. Teacher characteristics also influence instruction. The teacher's cultural and educational background and his pedagogical skill determine what learning experiences he is able to provide; his professional knowledge will determine whether or not he is even familiar with certain instructional procedures; his personal preferred style will influence the procedures he chooses to use.

2.3 Content. Regardless of any other contextual features, the controlling factor in determining the appropriateness of an instructional procedure or learning experience is what is intended to be learned through it, i.e., the content of the curriculum. The available cultural content also has instrumental significance, as will be discussed in a later section.

2.4 Residual. Non-instructional demands on both learners and instructors affect the kinds of learning experiences that can be planned, and indeed, in the case of teachers, determine in part the care with which instructional planning itself can be carried out. These demands range from routine clerical and policing tasks imposed on teachers in the lower schools to expectations for research and writing and participation in institutional governance at the higher education level.

9.3 Learning Experiences

"Experience" is one of the most central, and at the same time most misunderstood and abused, concepts in education. It is central because it is difficult to conceive of learning taking place other than in, or through, experience. But the term is surrounded by the same kind of confusion that besets "curriculum," and indeed the two are in fact equated by those who define curriculum as "planned learning experiences." It

should be clear, however, that in the present context experience is considered an instructional concern, rather than a curricular one.

Dewey (1938) sought to clear up various misinterpretations of his earlier emphasis on experience. His concern had been that too much school learning was based on passive reception of verbal formulations of phenomena which were completely unfamiliar to young children. He advocated a more active approach involving greater utilization of direct experiences with phenomena in a child's own, familiar environment. He did not say that the activity had to be overt, that all experiences should be direct and none vicarious, that their order was unimportant, or that the learner's environment should not be expanded to include the unfamiliar.

Dewey called attention to two important dimensions of experience: its continuity over time and its consisting in an interaction between an individual and some aspect of his environment. Interaction implies both doing and undergoing on the part of the individual, i.e., producing an effect and being affected. A human being must not be compared with ark inert material object which merely reacts when acted upon by an outside force. The human being can act as well as react. Moreover, humans can perceive, and not merely sustain, effects upon them, i.e., they can invest their interactions with meaning and derive meaning from them. Paradoxically, the probability of investing meaning depends on the familiarity of the interaction, i.e., its similarity to previous experiences, whereas the probability of deriving added meaning from it depends on its novelty, i.e., its dissimilarity to previous experiences.

Undoubtedly something, however little, is learned from every experience, but the expression, learning experience, is conventionally reserved for an interaction which is either intended to result in learning or conspicuously does so. Such experiences are characterized by a propitious balance between familiarity and novelty, both features obviously being relative to the individual and not absolute attributes of the interactive situation. The effect of continuity on the learning potential of an interaction is, therefore, obvious.

Continuity implies a persisting residual effect of experience. The residue is sometimes confused with the experience itself, as when it is said that a person has, rather than has had, much experience, or that a particular experience "stayed with" a person, or that a person must acquire, rather than have, certain experiences. An experience occurs, and then it is over and gone; what remains, if anything, as a residual of an experience is its effect, i.e., either the memory of the interaction itself, or a change in knowledge, understanding, capability, or attitude resulting from it, or both. One does not learn one's experiences; one learns from or through them. This is why curriculum cannot be conceived both as consisting in experiences and as being that which is to be learned.

Nor is it in any sense necessary or often possible to remember the experiences through which one learned something. Some experiences not intended to result in learning may be intrinsically valued and, therefore, memorable. Learning experiences need only be instrumentally valuable; if they are also intrinsically valued, so much the better, but it is their effect, not their affect, which is crucial.

Neither the immediate affective quality of undergoing an experience nor its residual effect is completely accessible to the external observer. Experiences are private matters--personal, subjective, internal, and ineffable. Learning can be detected to some extent from changes in the individual's performance, and an approximate awareness of the affective quality of an experience can be achieved through empathy by another person who has had an ostensibly similar experience. Even the judgment of apparent similarity is fraught with uncertainty, however, since it is based solely on the interaction dimension and overlooks the dimension of continuity. Since each experience is qualified by the accumulated residual of prior experiences, each individual's experience under any given set of circumstances must be unique. This fact, while thought-provoking, is not very helpful to someone desiring to plan learning experiences. Indeed, taken literally it makes the task impossible.

From a practical standpoint, it is necessary to treat experiences primarily in terms of their public features and to consider two experiences substantially identical if those outward manifestations are approximately identical. To communicate an experience or to plan one, its distinguishing features must be identified. In planning these are (1) its duration, (2) the segment of the environment involved in the interaction, (3) the activity of the individual with respect to this environmental content, and (4) the individual's relevant residuals from previous experiences. In communicating an experience already had, the additional features are (1) its immediate affective quality, as reported by the individual or inferred from his demeanor and (2) its residual effect, as inferred from changes in elicited performance in relevant situations. Instructional planning is usually directed at designing experiences likely to have a residual effect consistent with certain objectives or intentions, but attention must be given as well to the probable affective (motivational) concomitants (Haysom and Sutton, 1973/74).

9.4 Duration of Experience

The continuity dimension implies not only the persistence of residuals from past experience into the present, but also that experience is generically continuous during consciousness. An individual is constantly experiencing, except when asleep, anaesthetized, or totally deprived of sensory input and not dreaming. It is necessary, therefore, to distinguish between "experience" and "an experience."

On-going experience is perceived and recognized as being episodic. A segment of experience which is perceived or recognized as an integral entity is an experience. As such, it has a beginning and an end, and hence temporal duration, although other experiences can intervene in the same time period. In other words, an experience can be interrupted and resumed and still be perceived or recognized as an entity.

Thus, a course that extends over a period of a year or a semester can be viewed as a single learning experience, with a beginning and an end

and with a certain overall affective quality and a set of residual effects (learnings, trait modifications). Usually, however, a course is considered to include a number of learning experiences. Their duration may be only a few minutes during a single instructional session, or extend over several sessions on successive, or even widely separated, days, or, as in the case of some long-term project, encompass weeks or months with many other experiences intervening.

The determining factor as to how many activities and episodes of activity count as "an experience" appears to be the recognition of fruition of some set of intentions. These intentions may relate only to a certain quality of affect that is desired or to certain immediate external consequences, rather than to the residual effects in the form of learning outcomes. An experience for which such residual effects are not intended by someone cannot, however, be considered a "planned learning experience."

9.5 Learning Activities

The process dimension of a learning experience is a learning activity, which is denoted by some form of a verb. The activity may be as overt as talking, walking, writing, typing, sewing, sawing, and swimming or as covert as listening, observing, thinking, computing, and reading silently. Some activities occurring in an instructional setting are purely instrumental--the individual can already carry them out perfectly adequately and does so only as a means of acquiring some other intended learning outcome. Other activities are engaged in because the capability of performing them or doing so better is itself the ILO. This is the case of learning to do something by doing it, though it is probably essential to add "and by thinking about what one is doing." But while one can learn a cognition, one cannot do a cognition; still, to learn it, one must do something, i.e., engage in some appropriate learning activity.

The number of different kinds of activity that are appropriate for the learning of a given performance capability is severely limited and in some cases there may be no option at all, i.e.,

just practice the performance in question. For other kinds of learning outcome, the choice may be extensive, though not, of course, unlimited. Once the suitable activities have been identified, the selection from among them must be based on such frame factors as the characteristics of the learners, e.g., what they are likely to be capable of, and interested in, doing; the time required in relation to that available; availability of necessary materials, equipment, and space; and preferences and skill of the instructor. Where two alternatives equally satisfy these criteria, the decision may be based solely on the motivational desirability of variety, i.e., to avoid repeated use of a single activity.

9.6 Instrumental Content

Any activity denoted by a transitive verb must be directed at some content, i.e., some selected aspect of the environment. One must read, write, speak, or listen to something, i.e., some topic or existing work. There are many different kinds of thing that can be constructed, planned, observed, compared, or computed and many specific problems of many different sorts that can be solved. In addition to the identification of an activity, the planning of a learning experience entails the specification of its subject matter, the content toward which the activity is to be directed. Even activities denoted by intransitive verbs, which do not require direct objects, have distinguishing content aspects, e.g., swimming the crawl for 400 meters with no time limits is a different experience from swimming the backstroke for 50 meters within one minute.

As in the case of learning activities themselves, it is often the case that the content toward which they are directed is purely instrumental, i.e., not intended to be learned. This is true when the content is merely an example of a cognition to be learned or a vehicle for a performance capability to be learned.

Such cognitions as concepts and generalizations cannot be learned directly; they must be learned through examples, whether these are encountered before (inductively) or after (deductively)

the concept is defined or the generalization is stated, or both before and after. There is usually no need for the specific examples to be learned; after the concept or generalization has been learned, many new examples can usually be recognized or cited. Like scaffolding on a building under construction, the original examples (facts) are merely instrumental.

Similarly, content may be instrumental in serving as a vehicle for a process to be learned. If one is learning to read, the reading matter on which one practices need not itself be learned, and in learning to write, one can write on any number of topics without intending to learn anything particular about the topics. Obviously, it is also possible, and frequently desirable, to design experiences in which both the process and the content toward which it is directed are ILO's.

Whenever the curriculum designates specific facts or classes of facts to be learned, the learning activities that are chosen must be directed at those particular items of knowledge. The content is then curricular, rather than merely instrumental. If the atomic number of chlorine or the date of the Norman invasion is to be learned, no other content can serve as an example. Failure to distinguish between curricular and instrumental instructional content frequently results in testing to determine whether something has been learned that was never intended to be learned. Moreover, determining whether examples encountered during instruction can be recognized or recalled provides little evidence as to whether a concept or generalization has been learned. To test for these outcomes, previously unencountered examples must be used.

9.7 Display and Control Functions

The planning of instruction requires consideration not only of the learning experiences to be provided but also of the instructional procedures to be employed in providing them. Extensive classroom observation has led to the identification of six functions performed by instructors-control, search, display, refine, stabilize, and plan (Jackson, 1963). Since all of these except

"display" involve some sort of influence over the responses of the learner, the functions can be reduced to two main categories: display and control. These two functions must be carried out in every instructional situation, either by an instructor or by some device, such as a computer or a programmed instruction unit.

Both functions may be directed at both the activity and the content aspects of the intended learning experience. The display function has to do with exposing the learner either to some aspect of the environment (content) or to some performance he is to engage in (activity). The control function involves the provision of opportunities for the learner to respond to what has been displayed and the use of some means of influencing the character of his response. "Control" is not to be construed as implying coerciveness or even directiveness; it can be as subtle and permissive as asking a question or rewarding the slightest approximation of the intended response (operant conditioning). Similarly, "display" does not imply a visual presentation or one in which the content is explicitly isolated for attention; it can involve any or all sensory modalities, and it can be as indefinite as an invitation to examine the books on a shelf or in a whole library.

Awareness of the content and activity of the planned learning experience only guides the planning of display and control to the extent of indicating what is to be displayed and controlled. many options remain as to the materials in which the content is embodied and the manner of displaying them and, similarly, as to the manner in which influence is exercised over the activity.

Just as both affectivity and effectiveness must be taken into consideration in the design of a learning experience, so also must both be considered in the planning of the display and control functions. Thus, "motivating" is not a separate instructional function; under various circumstances, different means of display (materials, media) have differing motivational effects and different methods of control have differential effects in inducing participation in a particular learning activity. Motivation is a quality to be attained

or sustained, not a function or activity.

9.8 Curriculum and Instructional Planning

Curriculum is one input into instructional planning. It serves directly to guide the design of learning experiences and indirectly affects decisions regarding the manner of carrying out the two instructional functions. Which facets of instructional planning are most strongly influenced by curriculum depends on the nature of the curriculum item (see Figure 9.1). To be learned, any performance capability, whether cognitive or psychomotor, must be engaged in; therefore the learning activity is in large measure specified by the curriculum, whereas there may be no restriction at all on the content toward which the activity is directed. At the initial stage, at least, display of the performance in some way is usually necessary. The control can vary from emphasis on the prevention or swift correction of performance errors to the reinforcement of spontaneous activities that tend in the direction of the desired performance.

When the curriculum item is a cognition, it is the content of the learning experience that is indicated. Singular propositions (facts) dictate the specific content; more general propositions limit, but do not prescribe, the particular exemplars that may be used. In neither case is the mode of display specified, so long as the information displayed is relevant to the curriculum item. Nor is the precise learning activity indicated, although the acquisition and retention of facts requires activities of a different kind from those which facilitate the apprehension or application of concepts and principles.

The nature of the activity determines to some extent the kind of control that is appropriate. The difficulty of a concept or principle for a particular learner also has a bearing on the mode of control. Extremely easy or difficult ones often call for a deductive, didactic approach, while those of intermediate difficulty may permit an inductive, heuristic mode of control. Difficulty is not a function of the type of curriculum item, but rather of its substance in relation to certain characteristics of the learner, notably his learn

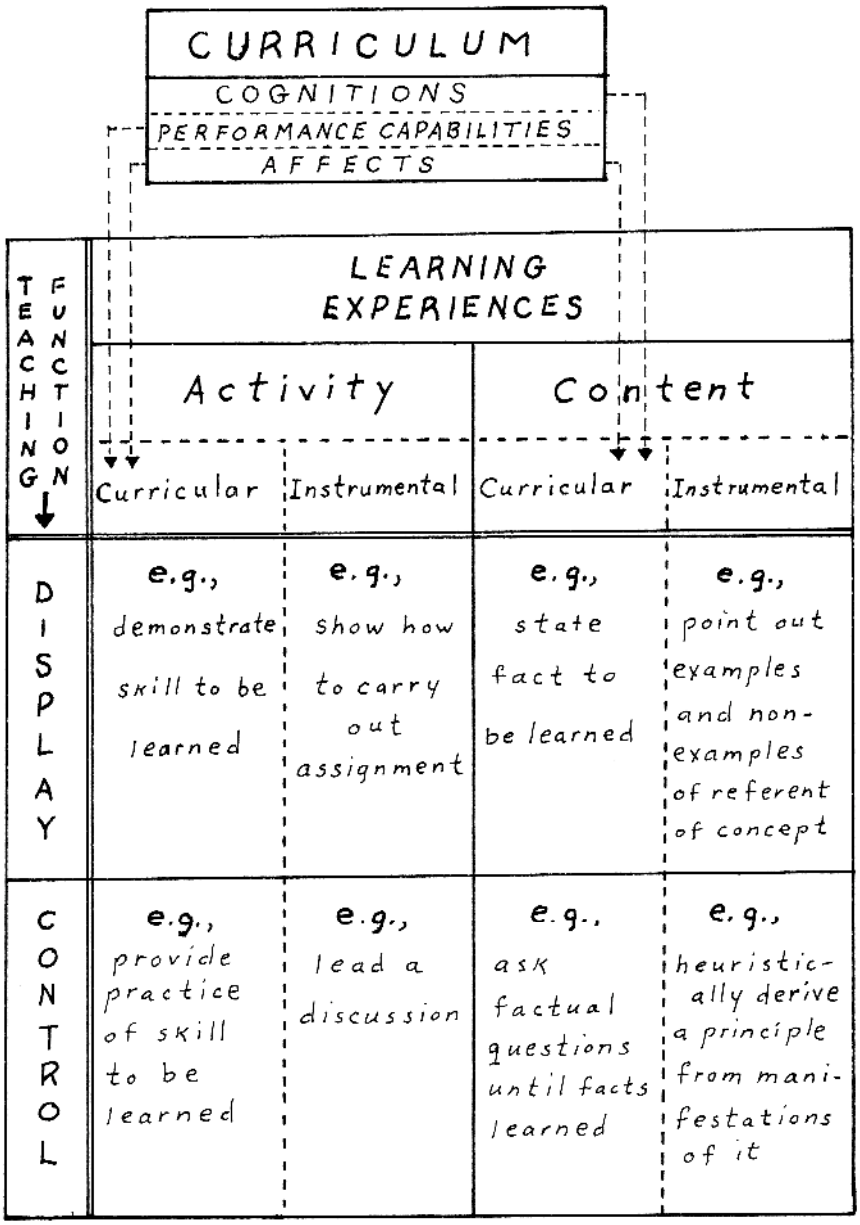


Figure 9.1. Curriculum may provide guidance for instructional planning of both display and control of both activity and content aspects of learning experiences.

ing aptitude and previous learning (entry behavior). The instructional time available is another important determinant of whether an inductive or deductive instructional strategy is adopted (Lundgren, 1972).

Display mode is inherent in some curriculum items. Recall of movements or actions is different from recall of words (or pictorial or symbolic content), and each type of content imposes certain limits on the instructional display mode, though not necessarily on the medium. Words can be presented both orally (lecture, record, tape) and in written form (on paper, chalkboard, transparency, cathode ray tube); actions can be displayed with motion picture film and videotape recording, as well as through "live" presentations; pictorial material can be on canvas, paper, slides, chalkboards, and other media. Similarly, each of the intellectual performance capabilities (Bloom 2.0-6.0) can be limited to one form of content, i.e., figural, symbolic, semantic, behavioral (Guilford, 1959), or extended to all four. Curriculum must, therefore, specify the form, as well as the substance (subject matter), of the content of a cognition, or the object of a performance capability, and this specification must be respected in instructional planning.

In addition to the latitude already noted with respect to media within display modes, there are, however, other options in planning the display aspect of instruction that are not curricularly determined. For example, the learning of semantic material may be expedited or reinforced by accompanying the (oral or written) display of words with pictorial material. In the case of abstract concepts, display may proceed from enactive to iconic to symbolic "modes of representation" (Bruner, 1966) in succession. In a "spiral" curriculum structure, an enactive mode of representation may be used with immature learners, an iconic mode the next time the concept is encountered, and a symbolic mode when the learners are sufficiently mature. The similarity of Bruner's three "modes of representation" and the four categories in Guilford's "contents" dimension of intellect is apparent, but there is also one striking difference: while Guilford's placement of "figural" before

"symbolic" and "semantic" is followed by Bruner in placing "iconic" (equivalent to "figural") before "symbolic" (encompassing both Guilford's "symbolic" and his "semantic") Bruner puts "enactive" at the simpler end of the continuum, whereas Guilford's comparable "behavioral" is at the complex end. Thus, while enactive behavior has the potential for being vastly more complex than any figural, symbolic, or semantic representation or communication, it is at the same time simpler in the sense of being less abstract (more concrete). The classification of display modes (and media) along an abstraction dimension is also illustrated by Dale's (1954) "cone of experience," which orders them from most abstract to most concrete (see Figure 9.2).

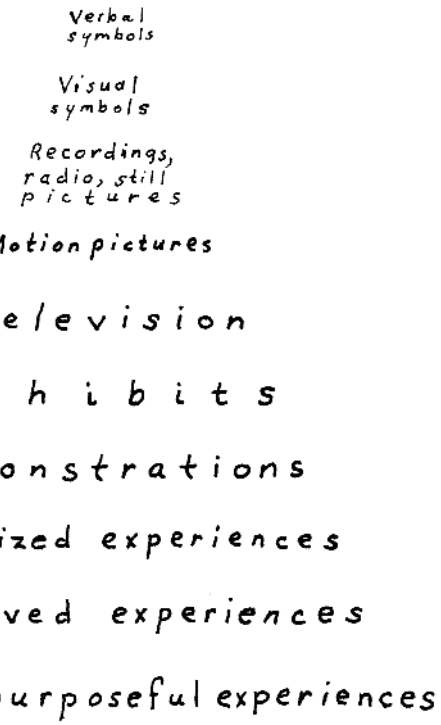


Figure 9.2. Dale's (1954) "cone of experience" orders display modes and media from most concrete to most abstract.

Some instructional planners advocate using as concrete a display as possible, whereas others, recognizing that many curriculum items are abstractions characterized by great "power," advocate being as concrete as necessary, but as abstract as possible. One of the reasons why instruction can promote efficiency of learning is the opportunity to use vicarious experiences instead of having to rely on direct ones.

9.9 Individualization of Curriculum and Instruction

A basic decision (or frame factor) in instructional planning is whether instruction is to be given individually or to many learners at once, and if the latter, whether all members of the group will have the same learning experiences or some will be provided different experiences than others. "Individualization" of instruction is to be distinguished from both the individualization of curriculum and the administrative measures which are designed to facilitate instructional individualization. The latter include provisions for individual tutoring, for positive selection of groups to increase similarity of learners, and for adjusting total instructional time. These are not instructional modifications because they do not represent determinations of learning activities, instrumental content, or time allocated to specific learning experiences.

Neither administrative nor instructional individualization implies anything about curriculum. Both are possible whether or not the same learning outcomes are intended to be learned by all individuals involved. Curricular individualization occurs when decisions are made that certain individuals or groups are to attain different learning outcomes than others or meet different standards of attainment for the same outcomes.

One of the variables in curriculum development is the extent to which the characteristics of the learners are known in advance. This variable is dependent upon the temporal relationship between curriculum development and the administrative process of selection, placement, or assignment of learners. Thus, one of two questions must arise:

(1) What is the most appropriate curriculum for this learner or for learners with these characteristics? or (2) For which learners or for learners with what characteristics is this curriculum most appropriate? Analogous questions arise in instructional planning, except that they refer to learning activities, instrumental content, modes of display and control, and learning time allocation, rather than to the learning outcomes intended thereby to be achieved.

It is widely assumed that some people learn better through one instructional approach (activities, materials, etc.) and that others learn better through another approach. The assumption implies a significant disordinal interaction between some attribute of learners and some feature of instruction (Cronbach and Snow, 1969). Most efforts to date to discover or demonstrate such an interaction have been unsuccessful (Bracht, 1970). The success of such studies of "aptitude-treatment interaction" (ATI) depends on discovering which learner "aptitudes" (personological variables or traits) and which features of the instructional "treatment" are most important in learning and then finding the combinations of these which make the greatest difference. with a trait that is not a factor in learning, the lines in Figure 9.3 will be horizontal. Obviously, a significant interaction is more likely the more the learners vary on the trait and the more dissimilar the treatments are.

Another assumption that has some currency is that individuals learn better under the kind of instruction they most prefer. Based on the concept of differing "cognitive styles," testing procedures have been proposed by means of which an individual's "cognitive map" can be constructed as a guide to the kind of instruction he presumably would prefer (DeLoach et al., 1971). If in fact people do learn best under their preferred kind of instruction, it may be due to the heightening of motivation. The value of any gain so derived must be weighed against that of acquiring the capability of learning equally effectively from a larger variety of instructional approaches.

All efforts at "individualization" of instruction short of a unique tutorial arrangement

for each learner are actually approximations for groups of individuals who are similar in certain respects. Often the aim is "personalization," i.e., enhancement of the interpersonal relationship between instructor and instructed, although

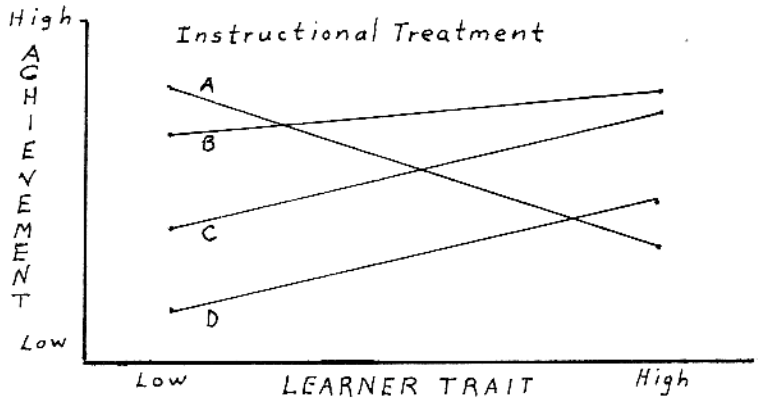


Figure 9.3. Lines show disordinal interaction between treatment A and the others, ordinal interaction between B and C, and no interaction between C and D (universal superiority of C).

this feature is completely lacking in computer-assisted instruction (CAI), which is also designed to be "individualized." The feasibility of any effort at individualization depends on many frame factors, such as size and heterogeneity of instructional groups, availability of varied instructional materials, and most importantly, flexibility in the allocation of time for learning. The stricter the limits of time, the less feasible is instructional individualization and the more necessary is curricular differentiation; conversely, greater flexibility with respect to time permits greater individualization of instruction and makes differentiation of curriculum less necessary.

Nevertheless, there are other reasons for differentiating curriculum, besides accommodating differences in learning rate. When the cultivation

of individuality is one of the educational goals, curricular differentiation is necessary to permit each learner to develop uniquely. Such differentiation on the basis of interest presumes sufficient knowledge on the part of the individual both of the options available and of his own affective response to them. Similarly, differing vocational plans or aspirations are a basis for curricular differentiation for learners who are mature enough to have reached such decisions and close enough to the time when the learnings will be applied that they are likely to be maintained at a functional level.

9.10 Evaluation in Instruction

Most instruction involves frequent checking to note the progress being made toward the achievement of ILO's. Various decisions hinge on the results of such evaluations. A major one is whether to proceed to the next step in the instructional plan or to extend, for all or some learners, the time devoted to the preceding one, either with further practice, with additional exemplars, or with learning experiences different from those used initially. There are research findings indicating that teachers tend to take their cues from a "steering sub-group" with an instructional group in deciding whether or not to proceed and that the reference group tends to range from the 11th to the 25th percentile in ability (Lundgren, 1972). In other words, in group instruction teachers are not likely to proceed just because the upper half of the class has learned nor to wait until the lowest tenth has.

Where greater "individualization" is attempted, interim evaluative information provides a basis for diagnosis and prescription. Such information is also used non-instructionally as a component in the determination of marks. These sometimes serve as a basis for indicating whether a given student possesses the aptitude or "entry behaviors" considered prerequisite for placement in later instructional situations, such as assignment to a particular section, registration for a course, enrollment in a program, or admission to an institution. This marking function is also served by terminal evaluation when an entire instructional plan or unit thereof has been implemented.

Whether interim or terminal, for guidance in adjusting plans, for diagnosis, or for placement, the evaluation in question differs from that discussed in Chapter 10 by virtue of its requiring the identity of the learner whose achievement is evaluated. Moreover, the decisions based on it affect individual learners. Program evaluation, on the other hand, does not require the identity of learners, and the data are used as a basis for revising plans and for deciding whether to eliminate programs or continue them with increased or diminished support. Planning for such evaluation of instruction is a managerial activity and is not represented in the technical P-I-E model; planning for evaluation in instruction is technical and is an aspect of instructional planning ($\overline{I}p$).

Planning for the evaluation of the actual learning outcomes achieved by individuals must be based on the ILO's specified by the curriculum, just as the planning of learning experiences is. Unlike the latter, however, the planning of evaluation necessitates the operationalization of ILO's, i.e., they must be translated into "behavioral terms" which indicate the kind of performance that will be accepted as indicative that a given ILO has been achieved. As Mager (1962) has pointed out, it is also necessary for the evaluation planner to decide under what conditions the performance is to be exhibited and what standards it must meet, i.e., given what, do what, how well?

Stating an intended outcome in behavioral terminology does not, of course, transform it into a "behavioral objective." if the ILO is a performance capability (process or behavioral objective), it does not have to be translated, although conditions and standards may have to be specified. If the ILO is a cognition, the planner has a number of alternative kinds of performance, involving the supplying (constructing) or the selecting of responses, from which to choose in deciding what evidence of learning to accept. The learner may be informed in advance of instruction precisely what performance will be expected in evaluation, but this is by no means necessary, and to the extent that it restricts the acquisition of a cognition to a single manifestation of it, such advance notice may be counter-productive.

Whether the instructor-evaluator should decide in advance of instruction precisely what form of evidence will be required is another matter. The disadvantage of doing so is that the instruction may unintentionally over-emphasize the anticipated performance ("teaching for the test"); the danger in not doing so is that the deferred decision may reflect the instruction more than the curriculum ("testing for the teach"). If the instructor or instructional planner cannot put the evaluation plan out of mind until needed, it may be preferable for the evaluation to be planned by someone else on the basis of the same curriculum.

When the actual "terminal behavior" of the learner is compared with the "terminal behavioral objective" (or "criterion behavior") to determine the congruence (Stake, 1967) between them, the evaluation is classified as "criterion-referenced" (Popham, 1973). For the reasons given above such evaluation is most applicable when the ILO is itself a performance capability. It implies an IT absolute" standard in that the learning is judged satisfactory (or defined as "mastery") only if the criterion is reached, regardless of the performance of other contemporary or previous learners. Evaluation based on such a "relative" standard as the performance of others is "norm-referenced," and its use is legitimate whenever there is no basis for requiring or expecting any particular level of performance on the part of learners and when the difficulty of test items is unknown, which is often the case before they have been tried.

When norm-referenced evaluation is not considered appropriate and the ILO's to be evaluated are too numerous for a criterion-referenced approach, it is possible to use "domain-referenced" evaluation (Hively, 1974). Closely related ILO's, expressed in operational terms, are classified into "domains," and a specified standard of performance on a sample of such criterion behaviors from a domain is taken as evidence of acceptable achievement of all ILO's in the domain. This approach resembles the well-established procedure of developing a test-item pool for all cells in a content-behavior matrix and constructing various tests by sampling, according to a pre-determined weighting, a certain number of items from each cell in

the matrix (Bloom et al., 1971).

Whether or not the achievement of a given ILO is summatively evaluated upon the completion of the planned instruction in no way affects its being achieved. Such evaluation is distinct from instruction, and while it may provide further (or the sole) evidence of the effectiveness of instruction, it neither adds to, nor detracts from, that effectiveness. if further instruction is provided on the basis of the evaluation, then the evaluation was "formative" rather than "summative," and formative evaluation is integral to instruction. In any case, evaluation of both types and the instruction itself must be planned with reference to the same curriculum. Therefore, if external examinations are used for evaluation, they must either be selected for their conformity to the instructor's curriculum (e.g., standardized achievement tests), or the instructor must adopt the curriculum on which they are based, e.g., New York State Regents Examinations.

9.11 The Instructional Planning Process ($\overline{I}p$)

Informal instructional planning is usually done by the instructor who is to implement the plans; formal instructional planning is performed by specialists. The chief distinctions between the two kinds of planning are the more precise knowledge of the characteristics of the learners possessed by informal planners and the greater attention to validation of plans in formal planning.

The validation process aims at assurance of the plan's effectiveness. It involves repeated revision and final demonstration. Revision is based on formative evaluation (Baker, 1973) in much the same way that such evaluation provides the instructor with guidance in modifying and implementing his own plans. Formally developed plans (instructional packages or kits) are destined to be published to permit widespread implementation. They must be refined as much as possible prior to publication, and it is necessary to inform prospective adopters as to what learnings the final plan can be expected to produce- if used with a particular "target population" under specified conditions. The latter information is obtained from summative

evaluation of reasonably large, carefully described "tryout" or demonstration groups. The various cycles of revision during development, however, are guided by information from formative evaluation of small numbers of learners in which attention is directed not only to what is and is not learned, but also to the learners' actions and comments while using them that indicate lack of clarity, points of difficulty, and degree of interest.

Like teachers planning their own instruction, formal planners must begin with a curriculum or else engage in curriculum development as part of, or prior to, the instructional planning proper. This curriculum development is sometimes referred to as "determining instructional objectives," i.e., intended learning outcomes.

But whereas instructors can plan instruction for a known group of learners, formal planners must assume or stipulate the characteristics of those for whom their plans are intended. If the plans are subsequently implemented with a group whose characteristics differ from those stipulated, or if the plans are not implemented as intended, then the results promised in their validation cannot be expected. Hence, in "installing" published programs (instructional plans and materials) formative evaluation of another type is required. Called "implementation evaluation" by Alkin (1970), it focuses on the instruction process to determine whether the plans have been fully and properly carried out.

Both formal and informal micro instructional planning occur within the context of an actual or assumed macro instructional plan (or strategy). Administrators often play a significant part in macro instructional decisions. These decisions pertain to such matters as the size and composition of instructional groups; the qualifications and number of instructional personnel, professional and other; the length and frequency of instructional time periods; the availability of materials and equipment; the extent of individualization of instruction and closeness of supervision of learners; and whether instruction will be provided by means of television, computer, self-instructional materials, or teachers functioning individually as specialists, or as generalists in self-contained

settings, or in teams of single or mixed specializations. Also to be decided is whether the micro planning will be done by instructors, by learners and instructors together, or by specialists through formal instructional planning.

With due regard for the inherent differences among the several modes of micro instructional planning, the following steps must be carried out in some order and fashion:

1. Defining the "target" group of learners

2. Adopting (or developing) the curriculum

3. Designing one or more learning experiences (activities and content) for each curriculum item, appropriate to its type

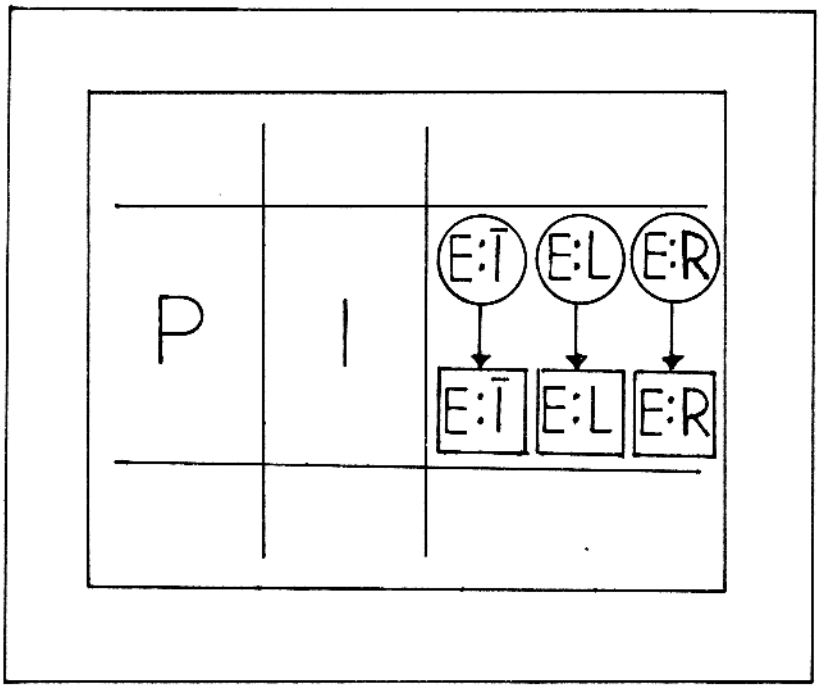
4. Selecting (or developing) materials embodying the necessary curricular and instrumental content

5. Determining a means of displaying the content and activities

6. Deciding on procedures (assignments, questioning techniques, discussion formats, practice exercises, etc.) for controlling students' activities and responses to reach the desired level of performance and retention

7. Planning techniques and instruments for (a) precursive diagnostic evaluation to guide individualization, (b) formative evaluation for modification and adaptation of plans, and (c) summative evaluation for recording learners' achievement, guiding planning of next instructional component, and assessing need for revision of current plan before further use.

Chapter 10: Technical Evaluation



Chapter 10

TECHNICAL EVALUATION

10.1 Program Evaluands

Evaluation is the judgment of the worth of something on the basis of descriptive information and appropriate criteria and standards. That which is evaluated is the evaluand. Evaluation is inevitable in that human beings tend to react favorably or unfavorably to everything they experience. When evaluation is undertaken deliberately and systematically, it is usually because the evaluative conclusions are needed in some anticipated decision-making process. In such evaluation, care is taken to assure that the descriptive information about the evaluand is based on as objective, reliable, and valid observation as possible and that the evaluative criteria and standards are explicit, unambiguous, and accepted by the decision makers as relevant to their purposes.

All of the technical processes identified in the model, as well as their respective products, are potential evaluands. Whether and when any one of them becomes the object of systematic evaluation depend on decision-making requirements within the total system. A policy of continuous planning for program improvement demands continuous program evaluation. Program evaluation is distinguished from the evaluation in instruction discussed in Chapter 9 by the fact that it does not require that the identity of individual learners be known, since the ensuing decisions pertain to policies, plans, and procedures, rather than personnel. The goals of the two types of evaluation, i.e., the variables described and judgments made, may be similar, but their roles, i.e., purposes of carrying them out, differ (Scriven, 1967).

Process evaluands can be evaluated on the basis of direct observation if they are accessible to observation and if the features associated with their effectiveness are known. They can also be

evaluated indirectly by evaluating their products, although when a product is unsatisfactory, it is often difficult to determine what feature of the process was responsible for the shortcoming. Products, too, can be evaluated either directly, by observing their characteristics and comparing them with those they were intended to have, or indirectly, by monitoring the process by which they are produced. In other words there is an assumption that a process is satisfactory if its product is satisfactory, and vice versa. This is convenient when one or the other is difficult or expensive to observe accurately. The assumption is meaningless, however, unless the relationships between process features and product features have been well established through research or experience.

The technical evaluands are (1) the instruction process ($\overline{I}$) and its two levels of product: (2) learning outcomes (L), and (3) educational results (R). The processes of evaluating each of these three evaluands ($\overline{E}$: $\overline{I}$, $\overline{E}$:L, $\overline{E}$:R) and the evaluations resulting therefrom (E:$\overline{I}$, E:L, E:R) are themselves subject to being evaluated through the managerial process of "meta-evaluation" (Scriven, 1972). Six additional managerial evaluands are the three technical planning processes and their products, viz., educational goals ($\overline{G}$, G), curricula ($\overline{C}$, C), and instructional plans ($\overline{IP}$, IP). Thus, for any given planned process, evaluative attention can focus on the plan (a product), its generation (a process), its implementation (another process), the result of its implementation (another product), the evaluation of the implementation and its results (still another process), and the result of that evaluation (still another product). Since most of these evaluations are managerial, they will be discussed in Chapter 13. However, many of the considerations in the technical evaluation of $\overline{I}$, L, and R are also applicable to managerial evaluation.

10.2 Plans as Sources of Evaluative Criteria

Process plans express intentions that certain steps be carried out with particular materials under specified conditions. Process evaluation must in part be concerned with whether these intentions were in fact carried out. Similarly, product plans specify the characteristics the products of

processes are intended to have, and product evaluation must assess the congruence between the intended and the actual characteristics of a product. Using a double arrow to indicate such congruence, the three technical evaluands can be related to plans, as follows:

Plan	**Evaluand**	**Evaluation Process**	**Evaluation Product**
G	R	$\overline{E}$:R	E:R
C	L	$\overline{E}$:L	E:L
IP	$\overline{I}$	$\overline{E}$:$\overline{I}$	E:$\overline{I}$

Descriptive data relating to a process evaluand can be obtained through direct observation, photography, or recording (including video tape recording) or from logs, records, or reports of testimony of practitioners or participants. Formative process evaluation, carried out in the early stages of the process has been called "implementation evaluation" (Alkin, 1970) and is important in order to assure that subsequent evaluation based on product data is not directed at a "non-event" (Charters and Jones, 1973). In other words, when intended results are not obtained, it is sometimes because the process that was to produce them never occurred or at least did not occur in the way that was planned. whether the results of a project or program are judged to be satisfactory or unsatisfactory realizations of the intentions embodied in product plans, it is essential to describe as fully and accurately as possible the process (treatment) to which those results are attributable. Otherwise it is impossible to know just what it is that ought, in the one case, to be continued or diffused for wider adoption or, in the other case, discontinued or revised. Highly successful results are often claimed for mysterious, undescribed (and hence, non-replicable) processes.

Between a product plan and the actual product one always finds both a process plan and its implementation, e.g., IP and $\overline{I}$ intervene between C and L. If the product (e.g., L) is unsatisfactory in terms of its plan (C), then either the process plan (IP) was inappropriate, or its implementation

($\overline{I}$) was incomplete or inept, or both. If the product is satisfactory, then presumably both the process plan and its implementation were also satisfactory, though both might be further improved. Evaluation in which curriculum serves as criterion is clearly not an evaluation of curriculum, however. The fact that a process plan is successfully implemented, or the intentions of a product plan are successfully realized, indicates only that the plan in question was feasible, not that it was desirable. Conversely, unsuccessful implementation does not indicate that a plan is either unfeasible or undesirable.

Scriven (1974) has argued for evaluation of results without reference to intentions, i.e., goal-free evaluation (GFE) rather than goal-based evaluation (GBE). The argument is based on the assumption that knowledge of intentions restricts the evaluator's observations and interferes with the detection of unplanned process features and unintended outcomes (side effects). It also underscores the point that evaluation of implementations does not evaluate the plans. Thus, evaluation of instructional products does not evaluate curriculum.

One counterargument is that programs should not be subject to criticism for not achieving results that were never intended to be achieved. Another is that all features of an evaluand cannot in any case be noted, recorded, and judged, and, therefore, some basis is needed for delimiting the evaluation, similar to that of hypotheses in research. When an evaluator selectively introduces additional criteria, subjectivity is increased.

Whether evaluators are distracted from noting other effects or characteristics by using plans as criteria is an empirical question. The extent of distraction undoubtedly varies with, or is one index of, the expertness of evaluators. Moreover, the claim that the intentions embodied in plans are necessary criteria does not mean they are sufficient bases for evaluation. Plans seldom explicitly identify effects that are to be avoided. Frequently they also do not mention effects that are implicitly desired. These are not necessarily shortcomings in plans, and the use of criteria in

addition to stated intentions does not in itself serve to evaluate the plans themselves. The appropriateness of evaluative criteria and procedures is relative to the definition of the evaluand. Evaluative criteria are themselves always potentially subject to evaluation, as are the criteria for evaluating the criteria, and so on. The evaluation process must be delimited someplace by specification of its context.

10.3 Unplanned Effects

In the absence of written statements of intentions, evaluators must elicit them from those who have the responsibility for planning or the authority to commission the evaluation, or those who carried out the process or produced the product to be evaluated, or all of these. If the evaluator judges these intentions to be inappropriate or incomplete, he is claiming superior knowledge on the basis of research or experience. If he questions the priority of outcomes sought, he is superimposing his ideological or theoretical position on that of the program planners. Evaluations are likely to be rejected, and hence not used in decision making, if program personnel consider the observations to have been invalid or unreliable, or if they do not accept the criteria used or the weightings attached to them. The probability of such rejections is minimized in internal evaluations that are performed by the planners and implementers themselves. Frymier (1969) has argued, however, that the integrity of any social system requires independence of the policy-making and planning function, the implementation function, and the evaluation function. it is difficult to be objective about one's own performance and productions. Moreover, the same limitations of vision and insight which characterized planning or implementation are still present when program personnel do their own evaluation.

Nevertheless, since the three processes (P-I-E) are logically integral parts of the same total entity, and since evaluation (and revision on the basis of it) must be more or less "continuous," most evaluation must be performed "internally," although differentiation of function is possible, even within a program or project.

Designated internal evaluators may not be able to avoid personal identification with other program functions, but they have advantages over external evaluators in having fuller knowledge of the program context and greater opportunity to communicate evaluation results to program personnel, while still to a degree sharing with outsiders the ability to bring fresh and independent insights to bear upon a situation to which planners and implementers are too close.

The extent of this ability to note "unintended outcomes" (Messick, 1969) and other significant, but often overlooked, features depends upon the quality of the evaluator's "connoisseurship" (Eisner, 1975) with respect to the evaluands in question. In evaluations of the instructional process and its products, unplanned effects commonly looked for are: (1) concomitant learnings, especially positive and negative effects and those outcomes which are associated with creativity, thinking ability, and problem solving; (2) other primary effects, such as students' motivations toward the subject, toward learning in general, and toward school, effects on students' achievement and participation in other areas, and their attendance and persistence in a program; and (3) secondary effects, including reactions of involved teachers, of other professionals, of pupils' parents, and of citizens (Scriven, 1967).

Evaluative data and conclusions pertaining to unplanned characteristics of any evaluand have various implications for the particular plans which serve as a partial source of criteria for the evaluation. The significance of the presence and absence of both desirable and undesirable, planned and unplanned, features are summarized in Figure 10.1.

10.4 Evaluation Stages

Evaluation serves different purposes at different stages in a complex series of processes. When processes are cyclic and more or less continuous, the designation of beginnings and endings is often arbitrary. With reference to any given set of actions, however, evaluation can occur before they begin, while they are in progress, and after

they have ended. These relative stages may be identified as pre-active, transactive, and postactive, or with respect to evaluation, as precursive (Johnson, 1974), formative, and summative (Scriven, 1967).

Status of Evaluated Feature			**Significance**
Planned	Present	Desirable	Successful implementation of satisfactory plan
Planned	Present	Undesirable	Serious plan defect
Planned	Absent	Desirable	Implementation shortcoming
Planned	Absent	Undesirable	Innocuous plan defect
Unplanned	Present	Desirable	Needed plan addition
Unplanned	Present	Undesirable	Needed plan or implementation revision
Unplanned	Absent	Desirable	Possible plan addition
Unplanned	Absent	Undesirable	Satisfactory plan and implementation

Figure 10.1. Significance of various evaluation results (from Johnson, 1974).

Various evaluation models employ different terms to denote these stages. The language of four such models is compared in Figure 10.2. in some of them, the process of interest is specifically instruction; others are applicable to any transformation process.

Some of the purposes that precursive evaluation may serve are: (1) to determine whether any action is needed in a given situation, (2) to

determine the constraints and resources (frame factors) within which a course of action must be devised, and (3) to determine whether the conditions required for a particular proposed course of action are present. Precursive evaluation is intimately related to prior summative evaluations.

	Stage		
Model	**Precursive**	**Formative**	**Summative**
Stake (1967)	Antecedents	Transactions	Outcomes
Stufflebeam (1967)	Context Inputs	Process	Products
Taylor and Maguire (1966)	Broad objectives Interpretations	Strategies (Elicitations, presentations)	Specific outcomes Generalized outcomes
Provus (1971)	Program design	Program operation Program interim product	Program terminal product Program cost

Figure 10.2. Terminology for three evaluation stages in four evaluation models.

Unsatisfactory results in summative evaluations point to a need for change in programs and procedures. The "entry behaviors" and other characteristics of learners for whom planning and development are undertaken can be determined in part from. Previous summative evaluations. Decisions regarding the adoption of developed products and processes rest heavily on precursive determination of the degree of similarity between the adoption situation and the tryout situation described in the summative evaluation information provided by the developers. When prior summative evaluative data are unavailable, undependable, or incomplete, additional precursive observation, description, and judgment are necessary. Precursive evaluation is typified in the instruction situation by the

diagnostic activities carried out to determine the appropriate placement of pupils and the special attention they should have.

Once a process can be considered to be under way and while it can still be revised, formative evaluation provides a basis for deciding what modifications are needed and when the process can be terminated satisfactorily (or aborted in anticipation of failure). Two aspects can be identified: (1) implementation evaluation and (2) interim product evaluation. The evaluation of a process while it is still in progress is directed at the degree to which process plans are in fact being implemented. As products begin to emerge from the process, they are evaluated to determine how closely they resemble the intended final outcome. On the basis of these two types of formative evaluation, either implementation can be improved to conform better to plans, or plans can be modified to conform better to implementation realities. The judgment required here is analogous to that between Type I and Type II errors in statistical analysis: one wishes to avoid both (I) stubborn adherence to an ineffectual plan which is being implemented about as well as can be expected and (II) premature abandonment of a promising plan without allowing implementers sufficient opportunity to acquire the competence and confidence needed to make it work.

In the development context, plans (e.g., prototype materials or strategies) are assumed to require repeated revisions before they are satisfactory for validation testing or field testing (summative). As many as nine revision cycles have been recommended, though frame factors, such as costs and deadlines, often limit the number that are feasible. Formative evaluation, involving close observation and interview of few students, is less expensive than full-scale field testing, and revision is less expensive at the prototype stage than with finished products. Nevertheless, a decision must be made at some point to terminate such revision and undertake summative evaluation.

The function of summative evaluation also varies with the context. When materials or procedures are being developed for possible adoption elsewhere, the producer is obligated to furnish

summative data regarding what results were obtained with them and under what conditions. In the selection context, the potential adopter (consumer) who subjects the products to pilot testing must ascertain (precursively) that the conditions are sufficiently similar and (formatively) that directions for their use are properly followed before carrying out summative evaluation as a basis for a decision regarding full-scale adoption. Summative evaluation of locally developed curricular or instructional modifications subjected to experimental tryout informs similar decisions. In the operational situation, continuous summative evaluation serves purposes of accountability and of identification of needed curricular-instructional revision (needs assessment).

Comparative evaluation is appropriate in each context. In development and selection, products can be compared with potential or actual competitors; in experimentation, innovations can be compared with established procedures (controls); in the operational context, comparisons can be made between current results and those obtained in previous years or in similar situations elsewhere. Appropriate norms permit comparisons with average results obtained in numerous situations.

10.5 Standards and Congruence

Some results or conditions are two-valued, i.e., they can either be present or absent, not present to some degree. Certain simple skills either can or cannot be performed; specific facts are either known or not known; an item of equipment either is or is not on hand in a classroom. In such instances, a standard is implicit in a criterion.

Other criteria are multi-valued and can be met to varying degrees. Complex skills can be performed expertly or poorly; concepts may be fully or partially formed; taken as an aggregate, many or few of a specified set of equipment items may be present or curriculum items achieved. In these cases, a standard must be set to indicate when a criterion has been met.

The standard for an individual instance may be expressed as a raw score or rating or in relation

to some norm as a percentile, stanine, or other "standard score." For a group, it may be expressed as a central tendency (mean, median, or mode) in absolute or relative terms or as a percent of members reaching a specified level, e.g., "90-90"--90 percent of a group performing 90 percent of a set of tasks specified as criteria or selected randomly from an appropriate "domain" of tasks (Millman, 1974; Shoemaker, 1975).

When standards, however expressed, are viewed as minima, any shortfall is unsatisfactory; when they are viewed as ideals, some "tolerance" may be specified to indicate acceptable limits. Whether the standards are derived from plans or imposed by evaluators, judgment is required as to whether the observed characteristics are "congruent" (Stake, 1967) with them, i.e., whether the "discrepancy" (Provus, 1971) is unsatisfactorily excessive. The more judgment that has been expended in the specification of precise standards, the less judgment must be exercised in deciding (or agreeing) whether or not congruence is satisfactory. Without a judgment of worth somewhere in the process, however, there is no evaluation, merely description.

Norms are not in themselves standards. They simply describe what was once the case, without reference to what should be the case. Nevertheless, norms assist in the formulation of standards by revealing what might be feasible to attain or reasonable to expect. Human institutions, like human beings, must be held to standards that fall short of perfection, "this side of paradise."

10.6 Matrix Sampling

When testing or other evaluative observation is performed as a basis for advising, selecting, assigning, or certifying individuals, every individual is commonly required to respond to (or be observed on) every item in order to obtain complete and reliable data. In evaluating processes and products in educational programs, however, it is unnecessary either for any given individual to respond to every item or for any given item to be responded to by every individual. Both individuals and items can be sampled. Such double sampling

provides the greatest amount of evaluative information for a fixed amount of time or money. It is often not feasible to carry out many hours of testing or observation, and even when it is, the "opportunity costs" (Scriven, 1974) may be considered too high, i.e., time spent by both observers and observed might be devoted to some more worthwhile purpose.

A sampling matrix can be constructed listing all desired items of information about an evaluand in one dimension and all possible sources of such information (e.g., program participants) in the other. A diagonal series of cells can then be defined, such that the number of items in each cell corresponds to the time available to obtain the information. As many forms of a test or other observation instrument are produced as there are cells. The individuals who are to respond to each form are indicated by the matrix. All forms may be used in a particular class or group, but only a few individuals in each would respond to a given form (Sirotnik, 1974). Either the entire pool of items or the entire group of potential examinees can be exhaustively sampled, or both, or neither.

In the National Assessment of Educational Programs Project (NAEP), as many as 100,000 persons at four age levels are tested each year on exercises that would require some 14 hours to complete, but each individual actually participates for only about 50 minutes, and each exercise is completed by approximately 2,500 participants. In Comprehensive Achievement Monitoring (CAM), each student answers about ten questions pertaining to an entire course approximately every two weeks, yet never encounters the same question twice during the year, while at the same time each question is answered by a number of students at each testing interval. At the beginning of the year most CAM questions are "precursive," indicating status prior to instruction, whereas near the end most are "summative," providing information on long-term retention. At each testing, some items bear upon material currently being taught and are thus "formative," in function. Throughout any program, tests can be constructed to include three types of items, representing the current unit of instruction, previous units, and next units. Matrix sampling can he used with such so

called "trident" tests (Shoemaker, 1975), but,

whereas for program evaluation the sampling need not be exhaustive of either items or examinees, for individual decision-making in instruction it must at least be exhaustive of examinees, i.e., all must be tested, even if forms differ.

10.7 Technical Evaluation

Evaluation of the three technical evaluands (R, L, $\overline{I}$) calls for judgments based on observations of actual performances by students or instructors or on opinions regarding such performances when "hard data" are unobtainable. Opinions are heavily relied upon in evaluating R, because few measurement devises are available to assess the extent to which individuals possess the characteristics envisioned by G. Nevertheless, opinions regarding the products of programs need not be limited to the haphazardly acquired views of vocal, though sometimes uninformed, critics, but can be systematically obtained from carefully constructed samples of employers, citizens, parents, subsequently attended educational institutions and former students themselves, using uniform checklists or rating forms. For some goals, composite results from appropriate comprehensive examinations, such as in language, arts, mathematics, citizenship, and health, can be agreed upon as being indicative of R, either in lieu of, or in conjunction with, opinions.

The measurement of L is well-established, at least for cognitions and performance capabilities, and especially in global terms for various macro curricular categories, e.g., academic subjects. Evaluation of affective outcomes is more difficult, in part because of the vagueness with which the intended outcomes are expressed and the ease of dissimulation in responding. When the attitudes sought are clearly identified, a variety of established measurement approaches are available, relying either on verbal responses (Thurstone, 1929; Likert, 1932) or on less obtrusive observations, including projective devices.

Norm-referenced standardized tests, while extensively used, seldom provide information on specific intended learning outcomes and often do

not even give a representative assessment of achievement on a set of such outcomes for a "unit" or "course." Such differential assessment devices or "DAD" (Millman, 1974) often omit items which lack discriminatory power and hence fail to reveal anything about achievement on many intended outcomes. Moreover, the items which are included are usually not referenced to ILO'S, and although some information can be obtained by examining each test item and relating it to an ILO, the various curriculum items will be neither equally nor randomly represented.

A criterion-referenced (CR) interpretation is desirable in program evaluation in order to determine which, or what proportion, of a set of ILO's have been satisfactorily achieved. When the number of ILO's is reasonably small, each can be expressed in behavioral terms and referenced as a criterion. With thousands, or even hundreds, of ILO's it is cumbersome to test for each separately, especially if more than one item is used for each. A more feasible approach is domain-referenced testing (DRT), in which samples of items are selected randomly from "a well-defined set or class of tasks" called a domain (Millman, 1974, p. 315). The difficult task of defining domains is as much the responsibility of curriculum developers as of evaluators.

The evaluation of a process, such as $\overline{I}$, presents problems of a different nature from those of product evaluation. Direct observation by outside observers carries the risk of intruding upon the process and thereby altering it. Students, as participant observers, are usually not qualified to report on all technical aspects of instruction. Instructors' logs have a large element of subjectivity, and it is difficult to obtain electronic tapings unobtrusively or from more than a limited perspective.

Even when a process, or time samples of it, can be thoroughly and objectively recorded, the mass of data must be appropriately classified to permit interpretation. Well-established classification systems are available for purely descriptive organization of the language element in instruction in terms of pedagogical "moves" (Bellack, et al.,

1966) or the directness of interaction (Flanders, 1970; Amidon and Flanders, 1963; Amidon and Hough, 1967; Hough and Duncan, 1970). These systems do not, however, provide criteria on which to evaluate the effectiveness of the process.

Other observation guides, e.g., OSCAR (medley and Mitzel, 1963) furnish criteria which includes consideration of both the appropriateness of what occurs in the instructional situation and the skillfulness of the performance. Hence, judgment is passed on IP, as well as $\overline{I}$. When these concepts are distinguished, the evaluation of T involves noting the extent to which the IP is faithfully and skillfully implemented. The IP itself is a product, subject to evaluation on other bases. Like the other technical plans (G and C), IP enters into technical evaluation as a source of criteria, rather than as an evaluand.

10.8 Needs Assessment

Technical planning designed to bring about program improvement is initiated in response to recognized needs. With respect to any goal, a "need" (N) is represented by a discrepancy between an existing state of affairs or baseline (B) and that which is desired, i.e., some goal standard (GS). Thus, N = GS - B. The inability to eliminate this discrepancy with current procedures under existing conditions represents a "problem," to which various "solutions" may be proposed. When alternative solutions are proposed for the same problem, the theoretical soundness (ST) and practical feasibility (SF) of each must be judged in order to decide which proposal is to be funded for development, demonstration, or dissemination, or authorized for tryout or adoption. Thus, for a given problem, proposal fundability (F) is a function of solution quality (S), which in turn is a function of ST and SF.

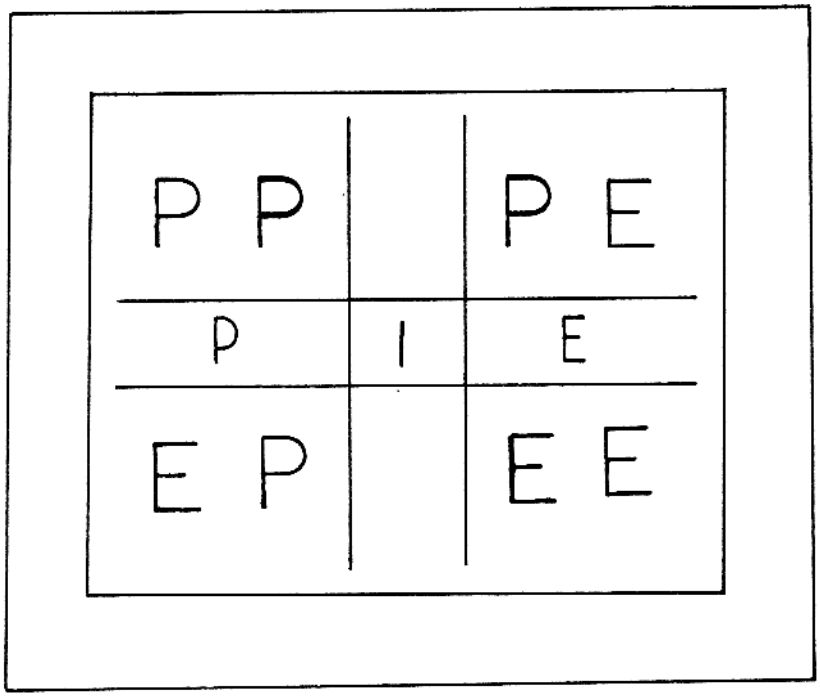
When proposed solutions to different problems are in competition for support, F depends not only on the qualities of the solution (S) but also on the significance of the problem. Problem significance (P) depends upon the extent of the need (N) and the priority (GP) of the goal that is not being satisfactorily achieved.

Judgment is required as to the relative weight to be assigned each factor. If theoretical soundness is considered more important than feasibility, then S might be set equal to 2ST + SF; if goal priority is believed to outweigh need, P might be 2GP + N; if the seriousness of the problem is deemed more significant than how promising a proposed solution is, then F might be based upon 2P + S. Under all the above assumptions, F = 4GP + 2N + 2ST + SF. Alternatively, since a value must be estimated for each factor, the scale for GP might run from 0-5, for N and ST from 0-4, and for SF from 0-3, with F = GP + N + ST + SF, which would then range from 0-16.

When no solution has yet been proposed, a decision is required as to which problems should have priority in a search for solutions through reexamination of goals, revision of curriculum, or modification of instructional materials and procedures. In the absence of specified standards (GS), evidence from summative evaluation regarding the extent to which various goals are currently being achieved can be judged as indicating a "need" (N) of 0-(highly satisfactory), 1-(quite satisfactory), 2-(average), 3-(somewhat unsatisfactory), or 4-(extremely unsatisfactory). The priority (GP) of each "goal" can similarly be rated as 5-(of critical importance), 4-(extremely important), 3-(of considerable importance), 2-(of some importance), 1-(of minimal importance), or 0-(inappropriate for the program). The formula, P = GP + N, will then classify problems on a range 0 to 9, providing a basis for an important managerial planning decision.

"Needs assessment," a major aspect of "context" evaluation in the CIPP model of Stufflebeam (1971; 1974), involves judgments regarding the significance of a "need," as well as its magnitude. It can be applied at all levels of planning, if "GS" and "GP" in the formulas above are extended to include curriculum items and elements in instructional plans.

Chapter 11: The Managerial H Model



Chapter 11

THE MANAGERIAL "H" MODEL

11.1 The Second P-I-E Dimension

The linear $\overline{P}$-$\overline{I}$-$\overline{E}$ model upon which the preceding chapters have been based provides for six technical planning and evaluation processes directed at the instructional process and its products. These six planning and evaluation processes and their corresponding six products are themselves subject to planning and evaluation. Such planning and evaluation are managerial functions, rather than technical. Thus, while the actual development of curriculum, $\overline{C}$, is a technical activity, planning for curriculum development, $\overline{P}(\overline{C})$ is managerial.

Whereas in the linear technical model, instruction occupies the implementation cell [I] to which the planning cell, [P], and the evaluation cell, [E], refer, from a managerial standpoint, both [P] and [E] become implementation cells. Any one of the processes in the [P] cell, for example, can be viewed either as planning of (technical) implementation or as implementation of (managerial) planning. Similarly, the [E] cell can be considered either technically as evaluation of implementation or managerially as implementation of evaluation.

To depict this double relationship, the linear model can be expanded to two dimensions, with the technical P-I-E cells shown horizontally as previously and with two managerial sets P-I-E cells shown vertically to form an "H" configuration with seven cells (see Figure 11.1). Single letters, P, I, and E continue to designate the technical cells and double letters are used to label the four new managerial cells. These are PP, the planning of planning; EP, the evaluation of planning; PE, the planning of evaluation; and EE, the evaluation of evaluation. The last named is known as meta-evaluation, and it is possible to refer to PP as "meta-planning."

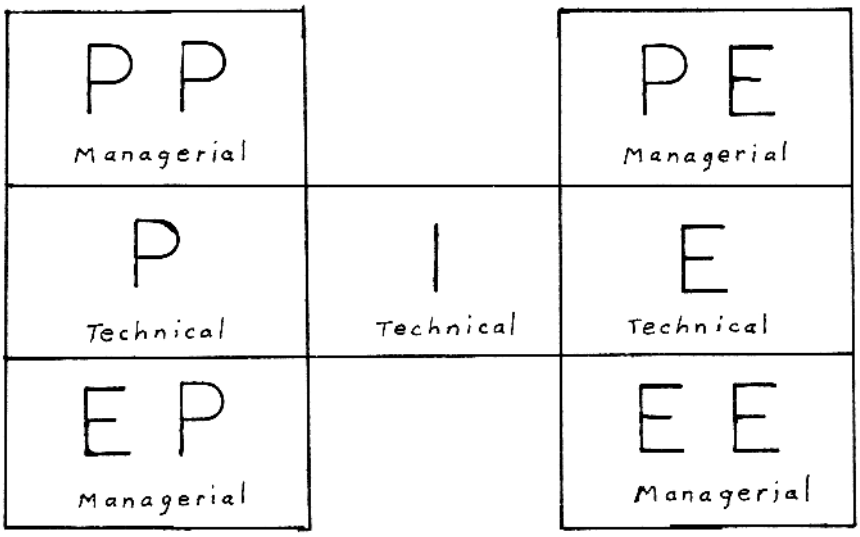


Figure 11.1. Two-dimensional block diagram showing three technical and four managerial functions is H-shaped.

Since the [P] function consists of three planning processes ($\overline{G}$, $\overline{C}$, and $\overline{\overline{IP}}$) and their products, the [PP] function must consist of six processes, i.e., the planning of the three technical planning products and of the three technical planning processes. [PP], therefore, results in six different managerial plans (products).

Similarly, [PE] involves six processes, the planning of three technical evaluation processes and their respective products. Obviously, anything in [P] that can be planned in [PP] can be an evaluand in [EP], and hence that block also contains six processes (and their six products). By the same token, anything in [E] that can be planned in [PEI can be an evaluand in [EE], which must, therefore, comprise six more processes and their products.

A tally of the processes and products identified to this point is given in Figure 11.2. It reveals a total of 31 processes and 32 products which are of primary importance in the management of a rational educational enterprise.

Type	Block	Number of Processes	Number of Products
Technical	P	3	3
	I	1	2
	E	3	3
Managerial	PP	6	6
	EP	6	6
	PE	6	6
	EE	6	6
	Total	31	32

Figure 11.2. Tally of principal processes and products in managerial-technical "H" model.

It should be noted, however, that the 24 managerial processes have not themselves been "rationalized." If each of them and their 24 products were also planned and evaluated, an additional 96 processes would be required. Since this kind of rationalization can theoretically go on indefinitely, but, practically, must end some place, the present discussion will extend no further than the 31 processes in Figure 11.2. But a manager ought to be able to visualize what additional levels would entail. For example, it is not uncommon for an individual or group, wishing to devise a plan, $P(\overline{C})$, for making curriculum development, $\overline{C}$, more systematic, to plan carefully a procedure for achieving such a plan. Such second-order managerial planning would be $\overline{P}[\overline{P}(\overline{C})]$ and would result in a plan, $P[\overline{P}(\overline{C})]$, which, when implemented as the process of $\overline{P}(\overline{C})$, would result in another plan, $P(\overline{C})$, which would in turn guide curriculum development, $\overline{C}$, which finally would yield an improved curriculum, C.

11.2 The Management Function

The distinction here between "managerial" and "technical," therefore, is based on functions, rather than structural levels. Both kinds of processes may in fact occur at the same level, as when a group established to engage in curriculum development devotes time to procedural questions (managerial planning) relating to the kind of product it will try to produce and the steps it will follow in producing it. An individual practitioner, e.g., a private music teacher, must of course carry out

all managerial and technical functions personally. Organizations, however, usually provide for role specialization in management.

The managerial function exists to assure that the technical function is effectively performed. Management entails planning, organizing, controlling, and administering (Voich and Wren, 1968). Only the planning and controlling (evaluating) aspects are considered here. It is to be taken for granted that some organization of the various system elements and authority structures exists to facilitate the achievement of system goals, and that the system is administered to achieve integration among its components.

But there are, in effect, two co-existing organizations: a technical or operating organization through which existing "production" goals of the system are attained and a second, managerial, organization through which improvements are made in the operating system (Johnson, 1973). This second organization provides for the research, development, staffing, training, and technical planning and evaluation on which depend the increased effectiveness and continual adaptability of the primary production process, in contrast to its normal, more or less, routine operation (see Figure 11.3).

Goal-attainment and organizational adaptability to changing demands and opportunities emanating from outside the system or from superordinate systems are the external dimensions of system functioning (Parsons, 1959; Parsons and Platt, 1973; Hills, 1968). The internal dimensions of Parsons' four-fold model, shown in Figure 11.4, are integration and pattern maintenance (tension reduction).

The two consummatory functions-- goal attainment and integration -- represent two sets of interests always present in organizations: (1) the institutional interest, with its roles and role expectations that must be satisfied and (2) the interests of the particular individuals who are incumbents in those roles, with their varying personalities and need-dispositions. Equilibrium between these two sets of interests is essential for organizational effectiveness and efficiency (and for

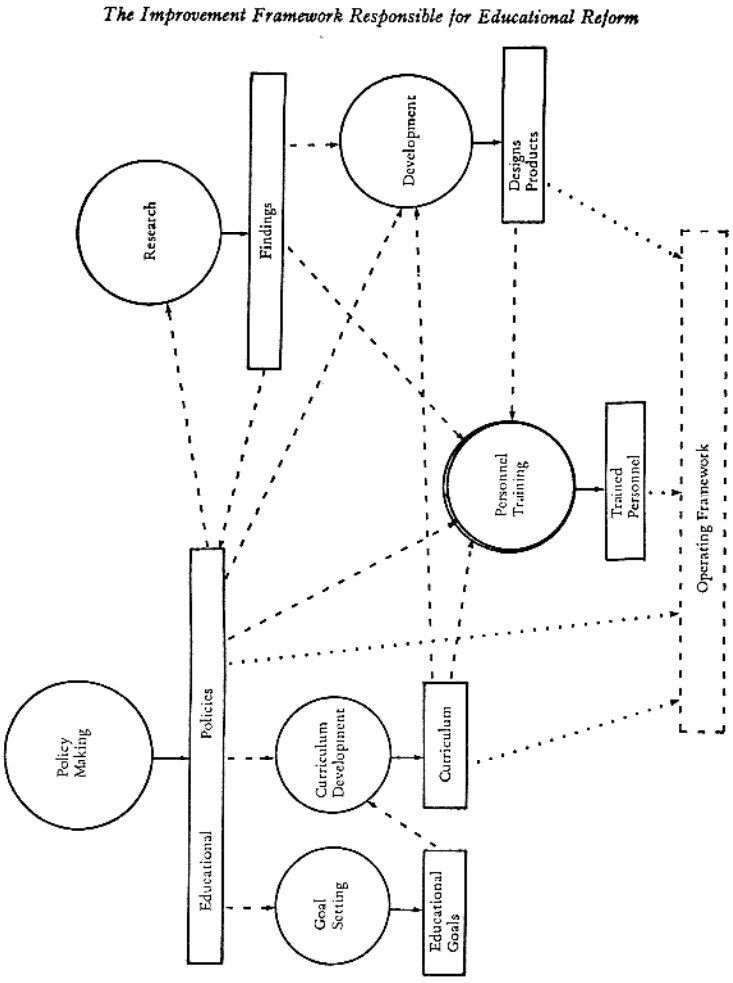


Figure 11.3. The improvement framework in an educational system can be distinguished from the operating framework. (From: Johnson, 1973)

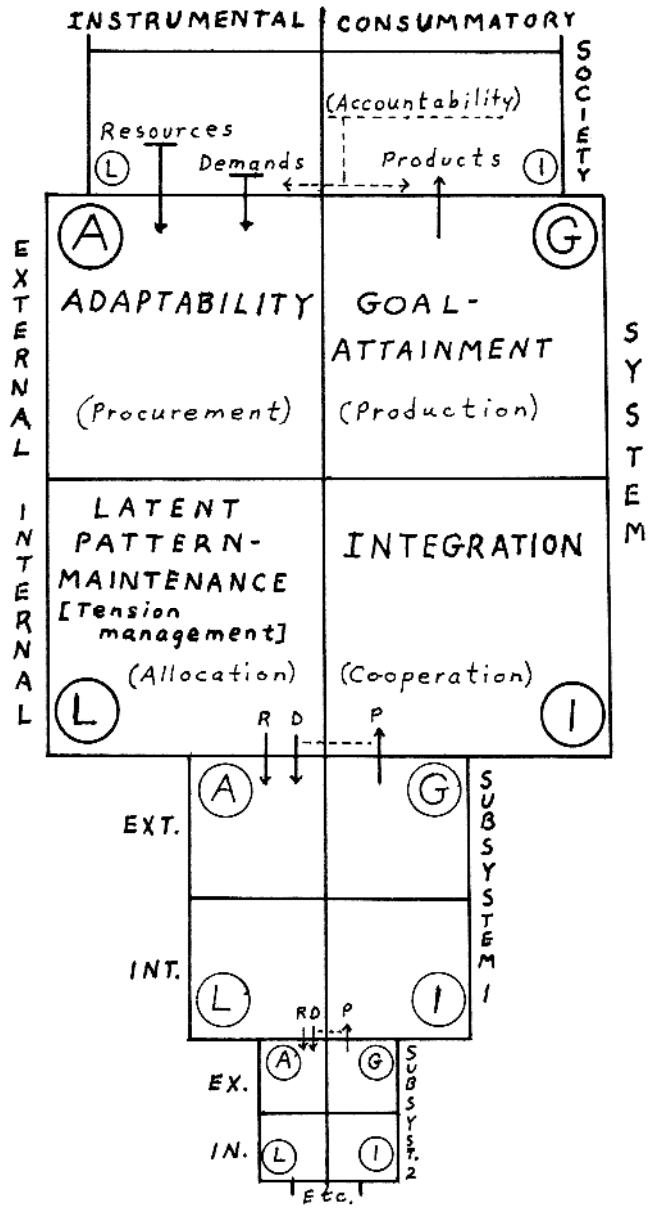


Figure 11.4. Four functions of organizations at all systems level derive from their external and internal, instrumental and consummatory, dimensions. (After Parsons, 1959, 1960; Hills, 1968)

personnel satisfaction), but managerial styles differ in the degree of emphasis placed on the nomothetic or "task-oriented" aspect (goal attainment) and on the idiographic or "person-oriented" aspect (integration)- (Getzels and Guba, 1957).

Nevertheless, while technical planning and evaluation heavily stress adaptability and goal-attainment, in assuming new goals or adopting new procedures, consideration must also be given to their effects on pattern maintenance and integration. Similarly, attention must be paid in managerial planning and evaluation to the various possible effects of introducing new procedures for technical planning and evaluation or new specifications for the results of these processes, i.e., goal statements, curricula, instructional plans, evaluation reports.

In every organization there is a latent tendency to resist change, to maintain the existing pattern. If the forces toward change upset the existing equilibrium, a new equilibrium is sought. If no technical planning occurs in an educational institution, then, so long as the institution survives, the instruction proceeds as usual under existing plans, i.e., toward existing goals with existing resources and technologies under existing interpersonal and intergroup relationships. if there is no managerial planning, there will continue to be no technical planning, or at best whatever technical planning exists will continue to be carried out in the current manner. The purpose of managerial planning is to improve technical planning, and the purpose of the latter is to improve the process and products of instruction. The purpose of technical and managerial evaluation is to determine whether and where improvement is needed.

11.3 Levels of Technical and Managerial Responsibility

The technical planning processes may take place at various decision levels defined in terms of their remoteness from 1. The terms "instructional," "institutional," and "societal" have been used to identify levels at and between which substantive (logical-deductive and empirical-inductive) and transactional (largely political)

decisions are made. These three levels are to be distinguished from an "ideological" level at which substantive, but not transactional, decisions occur (Goodlad and Richter, 1966). Proposals at the "ideological" level, even if highly rational and not idly speculative, are merely advocatory until adopted as intentions through transactional decisions at one of the responsible decision-making levels.

The classical organizational theory of Parsons (1959) identifies four organizational levels rather than three: societal, institutional, managerial, and technical. The societal level is generally understood as the total social system of a "political collectivity governed by a single more or less integrated system of values" (Hills, 1968, p. 50). It is conventional to subdivide this level into federal, state, and local levels, although intermediate levels are also identifiable in education. The other three main levels are not as consistently defined, but distinctions can be made among the district, the school, the department (or grade level or "team"), and the classroom.

For Goodlad and Richter the "institutional" level comprises educational organizations which are functional collectivities (e.g., school districts and schools), whereas Parsons uses the term "institution" in the sense of broader systems of conventions (e.g., property, authority), that regulate the specific functional collectivities, which for him, constitute the "managerial" level. This level consists in an aggregate of primary or "technical" units (often popularly called "institutions"), whose structure is provided by "roles," i.e., "the normatively regulated performances of categories of human individuals" (Hills, 1968, p. 50). Regardless of what names the levels are given, in the present discussion, "managerial" decisions are assumed to occur either at the same level as technical ones or at a higher level, and changes of both a technical and a managerial nature can take place at various levels.

11.4 Planning and Change

Planning implies change with respect to a process or a product, or both. If no change is

involved, existing plans must suffice, and assuring their implementation is a task for administration, not planning. When changes are introduced, they are often referred to as innovations. Whether something is or is not innovative may be considered a relative matter, i.e., anything new in a particular situation may be deemed "innovative," even if it is widely practiced in other situations. On the other hand, "innovation" may be limited to inventive solutions and not include the adoption of solutions devised elsewhere.

Four aspects of educational change can be distinguished: (1) research, which provides new insights, on the basis of which changes in practice might be justified; (2) development, involving invention and design of new procedures and materials; (3) diffusion, through the dissemination of information about innovations and demonstration of their validity and effectiveness; and (4) adoption, entailing limited trial of new practices in the application setting and if they prove satisfactory, their full installation, resulting in their eventually becoming institutionalized, whereupon the innovations themselves become candidates for replacement by other innovations (Guba and Clark, 1967).

In another formulation the steps in curriculum change were identified as innovation, diffusion, and integration, omitting research (Miles, 1965). Obviously, even when research is included, the change process does not always begin with research and proceed through the other aspects to adoption. The initiation of the process may occur in any one of three sectors: operations, development, research (Gideonse, 1968). If developed materials or procedures are already available, changes can occur in the operations sector without involving either of the others (see Figure 11.5). Development may be initiated in response to new research findings (supply-activated) or to needs expressed or identified in the operations sector (demand-activated). Research, in turn, may proceed with or without stimulation from the development sector. Communication among the sectors is clearly important, in one direction to transmit information on what is available (dissemination) and, in the other, to transmit information on what is needed (needs assessment). Managerial planning

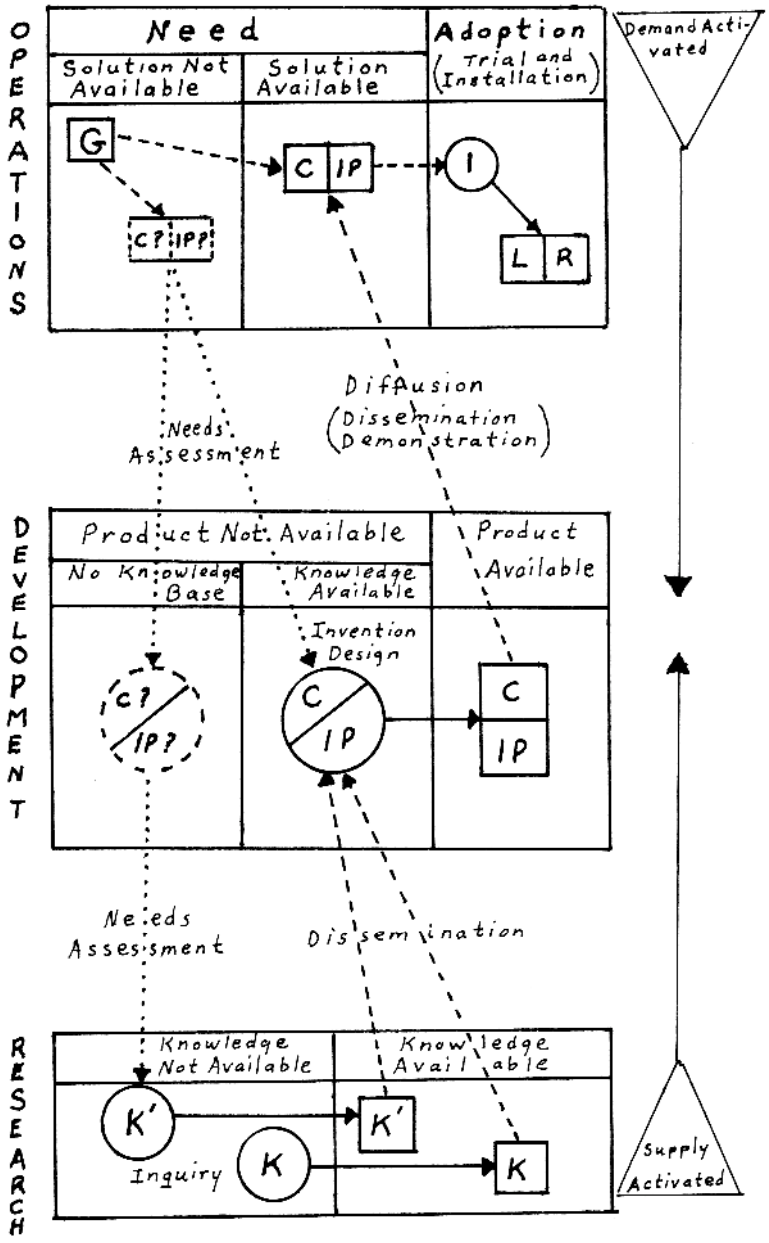


Figure 11.5. Innovation and change in educational operations can originate at any of three levels. (After Guba and Clark, 1967; Gideonse, 1968)

must provide for such communication, as well as for decision-making.

Changes can and do occur in institutional purposes, programs, and procedures without the benefit of planning. Some of these spontaneous, uncalculated, uncoordinated modifications may be deemed desirable, and some may not. In either case, they probably cannot be prevented from occurring; but neither can they be relied upon to bring about all required improvement. Rational improvement must be planned, and rational planning must also be planned.

Planning alone does not, however, assure change. Changes can be decided upon, but then be implemented ineffectually or not at all. Planning must, therefore, concern not only what is to be changed but also the conditions for implementing the planned change. Some of these conditions have been identified by Verduin (1967) as:

- atmosphere
- communication
- time allotment
- expert professional advice
- facilities
- material and human resources
- leadership
- group characteristics

Other factors besides managerial planning, specified by Taba (1962) as "strategies for change" are:

- creating conditions for productivity
- training
- human-emotional modification (attitudes, habits)
- organizing multiple competencies
- skilled leadership

Miles (1965) used the concept of "organizational health" to identify some of the requirements for task achievement (goal focus, communication, and optimal power equalization), for pattern maintenance (optimal resource utilization, cohesiveness, and morale), and for growth (i.e., constructive change), namely:

innovativeness
autonomy
adaptation
problem-solving adequacy

Just as the characteristics of administrators classified as "innovators" and as "early adopters" appear to differ (Carlson, 1965), so, too, the conditions which promote innovativeness may differ from those associated with readiness to adopt proposed changes. The individual teacher's scope for innovation is for the most part limited to micro $I_{\overline{P}}$ and modification of C for individual learners, i.e., changes which can be made without the permission or cooperation of others. Such intra-classroom changes can be inhibited by disapproval from superiors and colleagues, and hence the conditions for promoting them relate primarily to the reward system, i.e., what is accepted, encouraged, and recognized. Most other educational change appears to originate with administrators, rather than teachers (Brickell, 1961). Many other conditions are required to facilitate such broader change, chief among which are managerial planning and provision therein for participation in technical planning on the part of those upon whom implementation of planned changes depends.

Chapter 12: Meta-Planning

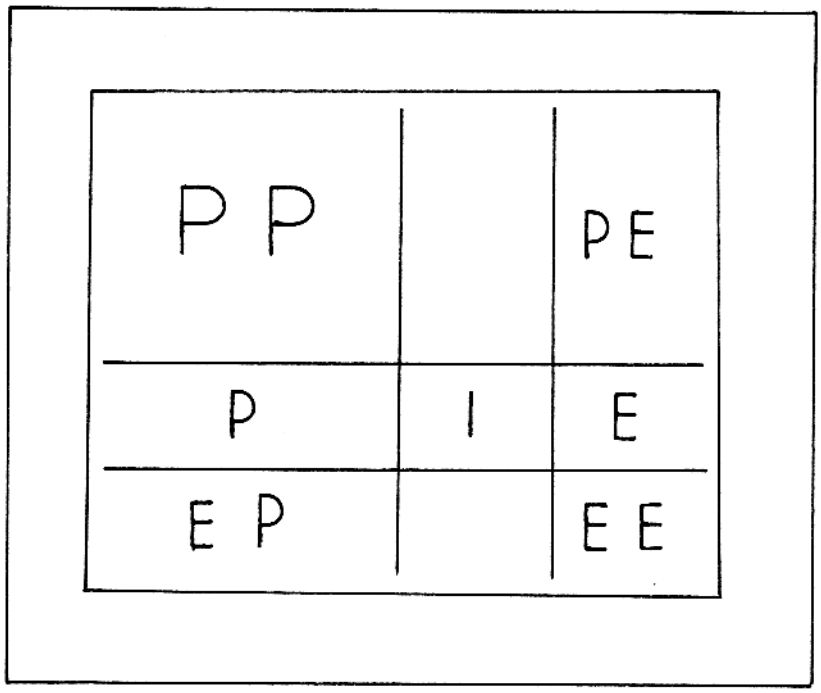
12.1 Planning for Goal Setting: $\overline{P}(G)$ and $\overline{P}(\overline{G})$

12.2 Planning for Curriculum Development: $\overline{P}(C)$ and $\overline{P}(\overline{C})$

12.3 Planning for Instructional Planning: $\overline{P}(IP)$ and $\overline{P}(\overline{IP})$

12.4 Political Aspects of Planning

12.5 Legal Aspects of Planning



Chapter 12

META-PLANNING

12.1 Planning for Goal Setting: $\overline{P}(G)$ and $\overline{P}(\overline{G})$

The general features of meta-planning, i.e., planning for planning, are similar regardless of whether directed toward $\overline{G}$, $\overline{C}$, or $\overline{IP}$. As in technical planning, products are planned before processes, and the nature of the planning task varies from micro to macro levels. Meta-planning can occur in one of three situations: (1) some person or group with managerial responsibility plans for others who do the technical planning, (2) a technical planning group makes procedural decisions as to how it will make its substantive (technical) decisions, and (3) an individual plans his own technical planning activities. The three situations are not unrelated, and (1) and (2) in particular, complement each other, since technical planning groups cannot come into being spontaneously nor can external managers foresee every contingency that will arise. If external managerial planning is too detailed, few options may remain for technical planners; if it is not detailed enough, technical planners may misconstrue what is expected of them or find it impossible even to meet together to begin their planning.

Meta-planning begins with envisioning what the final product--the technical plan--should look like, including whether it will be a single entity (e.g., a list) or have a number of varied components. If terminology can be used which can be assumed to be unambiguous to the technical planners, then a mere statement of what they are to produce is sufficient; otherwise, it is necessary to explain clearly and even illustrate what is desired.

Once the nature of the assignment is clear, directives or suggestions are appropriate regarding the following:

1. What kinds of decisions will have to be made to arrive at the final product?
2. What criteria or factors are to be considered in making these decisions?
3. What prior planning decisions should the planners be aware of?
4. What legal, political, and practical frame factors should they take into account?
5. Are priorities or sequences to be indicated, and if so, on what bases?
6. Who will use the ensuing plan and for what purposes? Who must approve it?
7. When is the plan to be finished?

With such questions answered, the meta-planner can proceed with planning the technical planning process.

1. Who will do the technical planning and how will they be designated and requested? How many should be involved?

2. Where will the group meet? When?

3. What supportive services will be provided, including consultants, travel, clerical?

4. How are the planners to arrive at their decisions, e.g., by majority vote or strive for consensus?

5. How is the chairman to be selected and the first meeting called? Is it anticipated that subgroups will be formed? Are there other groups working concurrently with whom coordination is desirable or necessary?

In the case of goal setting, in which lay people are most likely to be involved, detailed managerial planning and explicit instructions are especially important, and administrative liaison with the technical planning group is particularly useful. The members of such groups may need to be instructed to express educational goals in terms of the desirable characteristics that those who complete a given program can reasonably be expected to develop through their participation in it. Necessary examples can be provided by furnishing the group a proposed list for consideration, ratification, and assignment of priorities, or several

lists from which to select a composite one. If consistency of language is desired in the final list, it is probable that either the material

presented to the group will have to be reworded or the group's product will have to be edited later, because few, if any, published goal lists are free of inconsistencies.

Since goals inevitably reflect values, must include consideration of whether a particular Z~ group should be requested to undertake an explicit clarification of the values underlying their decisions or be reminded of some of the current value conflicts and confusions that are apparent in the culture. Sometimes such groups are provided with background documentation, e.g., information on national goals, trends, and needs; data pertaining to the local community and the potential students; futurist analyses; and philosophical positions relating to education. If prior meta-planning does not make provision for such support, the technical group itself may, in its procedural deliberations (managerial planning), request it or decide to obtain it.

12.2 Planning for Curriculum Development: $\overline{P}(C)$ and $\overline{P}(\overline{C})$

Because goals are usually reviewed relatively infrequently and most instructional planning is done by individuals rather than groups, the bulk of meta-planning is directed at curriculum development. At the macro level, this planning often includes appointing or providing for the election of a standing committee or council, preparing its agenda, scheduling its meetings, supplying it with information, and preparing and distributing its minutes and reports. Often, however, ad hoc curriculum development groups are formed to deal with specific curriculum revision problems, and in these circumstances, the required managerial planning is less routine. Such groups may be initiated at a higher organizational level, but involve personnel of single component, e.g., school, department, or grade, thus shifting planning responsibility to the lower-level leadership. Since micro curricular development can usually be done only by specialists in a subject field, such activities may originate and be carried forward entirely within a sub-component. Even an individual who sets out to plan curriculum must first (managerially) plan how to go about the task, i.e., envision the end-product,

consider what data need to be taken into account, and what decisions need to be made, in what order.

If the basic outlines developed in the previous section for planning goal setting are adapted to the curriculum development stage, the following meta-planning considerations must be taken into account either by or for the technical planners. It is assumed that curriculum planners have been informed or reminded, or have come to agree, that their task involves making decisions, at some level of specificity, regarding what is to be taught in some context.

Products

1. Decisions. Macro--Should certain proposed or potential categories of learnings be offered? Of whom, if anyone, should they be required? For what time duration should they be offered or required? What prerequisite courses or specific entry behaviors are necessary?

Micro--What specific cognitions, performance capabilities, or affective responses should be taught? What structural or ordering relationships should be observed among them?

2. Criteria. What criteria are to be applied in selecting what is to be taught? What educational goals are considered to be governing? What situational and target population characteristics are to be kept in mind?

3. Immediate context. What goals or curriculum categories has needs assessment determined to be candidates for improvement? What higher-level macro curricular categories have previously been decided upon? What broad macro instructional conditions should be assumed to prevail?

4. Broader frame factors. What courses or topics are legally required to be offered or to be studied by all or particular categories of students? What special interest groups are advocating or resisting the inclusion or omission of any courses or topics under consideration? What evidence is available as to local or broader sentiment regarding offerings in question? What resources and

constraints pertaining to finances, time, space and facilities, staff qualifications, materials, and equipment must be considered?

5. Ordering. What bases, if any, are to be used for deciding on the priorities which will be indicated by options and variable time allocations for subject areas, courses, topics, or items? What bases, if any, are to be used to sequence courses, topics, or items for instruction?

6. Disposition. Who, if anyone, must approve the curricular decisions made, e.g., controlling board, administration, collegial group, committee or council? What are the identities or characteristics of those expected to implement the curriculum?

7. Deadline. Has an implementation date been decided, before which curriculum development must be completed?

Process

1. Participants. Macro--who has the "right" to participate or be represented, on the basis of legal authority or principles of academic governance, citizen involvement, diversity of viewpoint, etc.? How many must be included to assure representativeness?

Micro--Who has the necessary specialized knowledge of the subject matter or of the anticipated learners? How small a group can be expected to complete the task effectively and in the time available?

2. Location. What kind of working or meeting facilities would be most convenient and appropriate to the task? How frequently must the group meet? What days and hours are most convenient? Are participants to be freed from other obligations or compensated for extra service?

3. Support. What budget will the group have at its disposal? What materials and services are available or obtainable? What kind of consultant advice is desirable, from professional staff, community, other institutions, universities, etc.?

4. Decision basis. What procedure is to be followed in case of disagreement among participants? Are alternative versions or minority reports to be accepted?

5. Organization. Is there a legitimate leader, or how is one to be selected? Can the group work as a whole, or does the nature of the task permit a division of labor? Would a "PERT" chart (Cook, 1966) aid in revealing which activities can be undertaken simultaneously and which must await the completion of others?

An elaborate system (Altman, 1968) for classifying the objectives and activities of curriculum development, though designed to permit analysis of theoretical positions on curriculum, also reveals the great variety of circumstances that practical meta-planners can encounter and the multiplicity of arrangements available to them in planning curriculum development., The system identifies 25 different objectives of curriculum development activities and classifies the activities themselves under nine categories of planning personnel, five ways of organizing the personnel, nine levels of planning arena, and no less than 80 different operations pertaining to seven major processes associated with curriculum development.

12.3 Planning for Instructional Planning: $\overline{P}(IP)$ and $\overline{P}(\overline{IP})$

In general, the same considerations with regard to product and process that were outlined in connection with goal setting and later applied to curriculum development are also pertinent to the managerial planning of instructional planning. But just as the tasks that fall under curriculum development are more varied than goal setting is, the diversity of situations in which instructional planning can occur exceeds that of curriculum development. Moreover, instructional planning has a greater probability than the other types of planning of being done by individuals rather than groups. Often the individual decides for himself what kind of plan he will make and the procedure by which he will make it. External guidance is most likely to be provided in a training situation, although some administrators and supervisors make

it a practice to require teachers to file lesson plans on a regular basis, often specifying the format to be followed in these plans, as well as in unit plans and resource units.

The compilation of resource units is one form of instructional planning performed by groups in the operational setting, though it is more properly viewed as "pre-planning," since it concerns possibilities, rather than definite commitments, with respect to learning activities, instructional materials, evaluation procedures, and the like. Macro instructional decisions may also be made or recommended by appropriate groups in the operational context--decisions pertaining to the duration and frequency of instructional sessions; the academic calendar; the teacher-pupil ratio; the provisions for individual and large-group instruction; the use of programmed, computer-assisted, and televised instruction; examination schedules; and the like.

Micro instructional planning in the operational context involves either (1) searching for and adopting a complete package of learning activities and instructional materials, or (2) assembling, from a variety of sources, a number of single- or multi-media materials with appropriate activities, or (3) developing materials and activities specifically designed for the situation. Since invention and design are extremely time-consuming and require relatively rare skills, these activities are commonly carried out by development groups not associated with a particular operational situation. Such groups ordinarily subject their prototype materials to empirical tests of effectiveness, thereby permitting some assurance of what they will accomplish if properly used. Managerial planning for any such detailed instructional development involves specification of the intended learning outcomes to be achieved and the characteristics of the learners who are to achieve them.

12.4 Political Aspects of Planning

The notion that education should, or even could, be kept free of politics no longer enjoys much credibility. Whether politics is defined as the "art of the possible" or as the use of power

toward the attainment of desired ends, it is obviously an important factor in educational decision making. Whenever the agreement of groups of people must be secured regarding the purposes to which limited resources are to be committed, not all things will be possible, at least not immediately. Which things will be done at any given time will be determined by those who have the power to prevail over others. That power is in part the power of rational persuasion; in part, however, it derives from authority, status, influence, popularity, cleverness in compromise or logrolling, or simply ability to organize effectively or to "manipulate the levers of Power." Self-interest is a major motivation for exerting influence over educational decisions, though genuine social concern often supersedes it, and even the less powerful or apparently powerless segments of society have spokesmen within the dominant group to champion their rights and welfare.

Laymen exert influence over curriculum and instruction in a variety of ways. One of the most powerful, though indirect, ways is by appropriating or withholding funds, both as to total amount and to specific budgetary categories. Campaigning and voting for individuals with acceptable viewpoints for membership on boards of trustees, state boards of regents, and local school boards are other means of exerting indirect influence. Numerous organizations, ranging from those with narrow selfish or partisan interests to those with general social, or specifically educational, concerns, have legislative programs directed entirely or in part to educational reform issues and often employ lobbyists dedicated to securing their enactment into law. Other organizations mount media campaigns or publish literature designed to inform and persuade the public and its representatives with respect to their positions on specific educational programs or policy issues. Some laymen exercise influence as members of planning groups appointed to reconsider institutional goals or to review or develop curricular proposals. Students and minority groups have resorted to demonstrations, confrontations, and illegal occupation of buildings to attempt to influence, or even coerce, favored curricular decisions. Foundations exert influence through their granting policies, and publishers and other "educa-

tion businesses" through their products and advertising. (See Figure 12.1 for types of influencing groups.)

Political considerations enter into decision-making, even on the part of professionals. Teachers' unions may prescribe both the conditions under which members will participate in planning and the positions they are to uphold in the course of such planning. These policies are usually put forward as being in the interest of "good education" or the "welfare of children" and often they are, though almost always they are also partially, if not mainly, in the interest of the members' welfare. Educational changes always involve to some degree a change in the "terms and conditions of employment" of teachers. Elimination of a course may lead to the abolition of one or more positions; changing a requirement may shift enrollments from one subject field to another; the introduction of new techniques may require additional training, sometimes at expense to teachers in time or money. Aside from considerations of their own welfare, teachers' "educational philosophies" reflect basic value commitments, political ideologies, and social philosophies, and these factors all enter into decision-making, even when there is every intention and sincere effort to be "strictly rational."

Because of the inevitable political aspect of planning, as well as such other human factors as friendship allegiances and personal aspirations, it is often argued that a rational analysis of the processes and products involved is either invalid or naive. It would seem desirable, however, to try to make political decision-making as rational as possible and the attempt would not seem to be entirely hopeless. Some differences of opinion may prove irreconcilable, but people do change their views on the basis of facts, reason, and recognition of inconsistencies. Nevertheless, the rational approach requires awareness of the existence and potency of non-rational elements in decision-making situations.

Clearly, there are some instances in which moral principles are involved. Most ideological disagreements do not, however, pit morality against immorality. Often they involve insufficiency of

AUTHORITY			↓	INFLUENCE			
LAY	PROFESSIONAL		LEVEL	LAY	SCHOLARS	PROFESSIONAL	
	SPECIALIST	GENERALIST				SPECIALIST	GENERALIST
Supreme Court Congress USOE			National	P-TA Special Interests Education Industry	ACLS AAAS MLA etc.	NCTE NAST NCTM NCSS etc.	NEA ASCD AERA AFT etc.
			Regional				Accrediting Ass'ns
Legislature Board of Regents	Subject Supervisors SED	Chief State School Officer SED	State	P-TA Sch. Bds. Ass'n Special Interests	State Learned Societies	state subject Societies	Administrators' Ass'ns ASCD Teachers' Unions
Bds. of Coop. Ed'l Services	BOCES specialists	District Supt. Ass't Supt. for Curriculum	Interm ed.	School Board Institutes	College-University Faculties	County Ass'ns	County Ass'ns
Board of Education	Subject Supervisors	Supt. of Schools Curric. Coord.	District	P-TA Council Special Interest Groups			Local Teachers' Assn Union Local
	Dept. Heads Dept. Faculties	Principal Faculty	School	P-TA Advisory Commitees			
Students	Teacher		Class	Home-room Mothers			

Figure 12.1. Various types of authority and influence affect curricular decisions at various levels.

facts, differing interpretations of available facts, or differing value hierarchies. Usually there are not two, but many, sides to a question. When an issue is reduced to a dichotomy, those in favor of an action have varying reasons for supporting it and, likewise, those who oppose it do so for a variety of reasons. Moreover, neither side is entirely in the wrong. Education is both conservative and progressive; it both imposes discipline and promotes freedom; it benefits both the individual and society. Participants in decision-making differ, therefore, primarily in their judgment as to whether one or another characteristic should predominate and whether it is under- or over-emphasized under existing or proposed policies. Those who claim that overly permissive treatment of children is undesirable and those who argue against overly repressive child-rearing practices are both right, but they differ in their interpretations of permissiveness and repressiveness. Everyone can agree that vocational training should not begin too early; the disagreement arises as to whether or not a given age is too early.

Some phases of educational planning call for democracy, others for expertise. Managerial judgment is required to determine which is appropriate in a given situation. Rational attention to facts, logic, and explicit, sound criteria is appropriate in either case.

12.5 Legal Aspects of Planning

Presumably the strongest expression of political viewpoints is their enactment into law, since this mobilizes the power of duly constituted authority to enforce adherence to them. Nevertheless, there are many laws pertaining to education which are neither observed nor enforced, either because they were enacted without widespread support or because they remain on the books long after such support has evaporated. Technically, controlling boards and professional educators are charged with the responsibility, and vested with the authority, for assuring that policies and plans conform to existing statutes and regulations as long as they remain in force. Some rules are observed to the letter, some in spirit, and others in the breach. Planners have the obligation to be aware of legal

and regulatory requirements and to use judgment in interpreting their meaning and their impact on proposed plans.

Legal stipulations range from (1) constitutional provisions to (2) educational law to (3) rules of regents or state boards to (4) regulations of commissioners of education or superintendents of public instruction to (5) policies and by-laws of local boards of education or institutional trustees to (6) administrative policies and faculty governance actions. In this chain, any enactment must conform, or at least not conflict, with any higher one. In the United States, the highest instrument, the Federal Constitution, is silent about education, and therefore, by its Tenth Amendment, reserves power over education to the separate states. The Congress enacts many laws which affect education, notably with respect to the distribution of federal funds and to the conduct of education in federally administered territories and institutions. The U. S. Supreme Court has also rendered numerous decisions that concern educational institutions and the rights of citizens in relation to them.

State legislation may be prescriptive, permissive, or proscriptive, e.g., require the teaching of English, allow teaching about Communism, and forbid religious instruction. Some legislation affects only frame factors, rather than the program itself. Provisions pertaining to the program may relate to goals, curriculum, or instruction. A rational arrangement might leave specifics of instruction, and even of curriculum, to the levels closest to the point of implementation, with the state limiting itself to general expressions of public sentiment regarding educational goals and levels of support.

The New York State education law, however, makes little mention of goals, leaving their promulgation to the Board of Regents, whereas the statutes do specify macro curricular categories that must be offered at various levels or required to be studied satisfactorily for various diplomas. They also specify certain micro curricular items to be learned, e.g., knowledge of federal and state constitution, flag etiquette, and effects of alco-

hol, tobacco, and narcotics, and rules pertaining to fire, firearms, and highway safety. Some provisions are instructional in impact, e.g., requirements for exercises on Arbor Day and specified national holidays; explicit stipulations on the format of physiology textbooks.

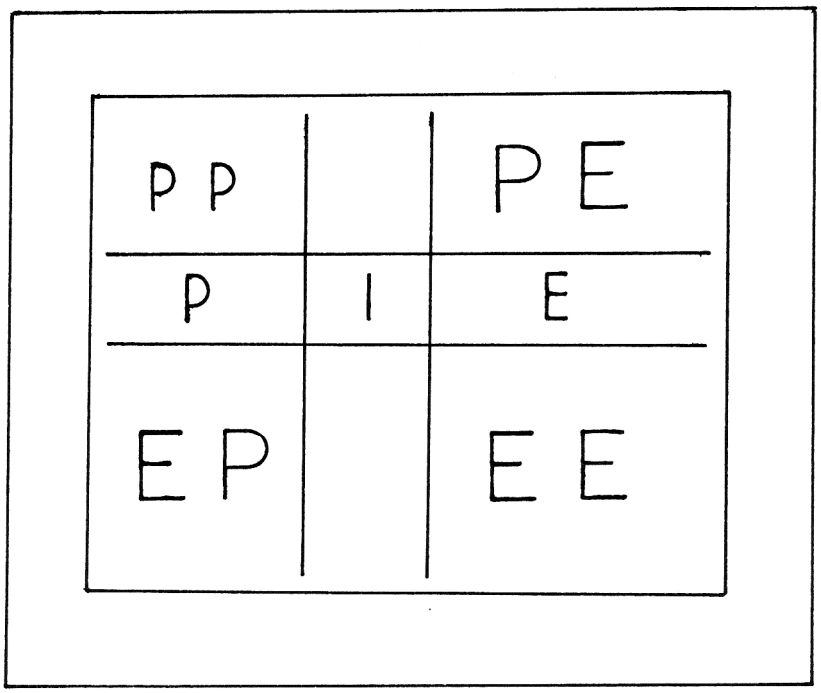
Other states impinge on instructional planning by adopting specific textbooks for state-wide use or by maintaining lists of approved textbooks. Within the framework of such state legislation and other state regulations, the power to approve curricula of schools is granted to local boards of education, indicating that the products of local curriculum development are ultimately subject to the review and approval of such governing bodies. In states, such as New York, where external examinations are provided and required to be administered by schools, it is necessary that micro curricula for pertinent courses at least not omit topics specified in relevant syllabi. These syllabi, prepared by experienced teachers, subject matter authorities, and curriculum specialists, are not, however, the products of political legislative processes. They are the products of rational curriculum development at a higher level and are themselves subject to approval by the state education board.

Quasi-legal requirements of an unofficial nature emanating from accrediting associations also govern local planning decisions. These requirements are set by duly constituted governing boards elected by the institutions which voluntarily seek membership in the associations, which may be regional, e.g., the Mid-Atlantic or North Central Associations of Secondary schools and Colleges, or professional, e.g., national groups for business schools, teacher education, or speech and hearing programs. Since these groups are both voluntary and democratic, institutions which find their regulations regarding required offerings, resources, staffing, or time allocations in conflict with local planning decisions have the option of withdrawing or of seeking to have the criteria changed through prescribed legislative procedures.

Perhaps the most universally observed "gold standard" of academic credit is the "Carnegie

Unit," named for the Carnegie Foundation for the Advancement of Teaching, which promulgated it in 1909. This convention measures educational attainment on the basis of instructional time, without regard for what is taught or how much is learned. Thus, the "satisfactory" study of any subject for 40 minutes at least four times a week for at least 36 weeks counts as one Carnegie unit of credit. The adoption of the unit brought some order out of a chaotic diversity of bases for informing institutions (and employers) about the educational preparation of individuals. The unit is obviously inconsistent with notions of mastery learning, for which time must be variable. Various programs of proficiency examinations at both the secondary school and college levels, as well as equivalency diplomas based on examinations, have been instituted to provide alternatives to the Carnegie unit. New York State Regents Examinations no longer require that the subject being examined has been studied formally for a prescribed length of time. "Mini-courses" with quite different time frames have been adapted to the unit system, indicating that it need not oppressively hamper planners. Some may in fact consider it too liberal in that it makes no distinctions among subjects as to how demanding they are of learning ability or effort.

Chapter 13: Managerial Evaluation



Chapter 13

MANAGERIAL EVALUATION

13.1 Evaluation and Planning

The P-I-E model may give the impression that evaluation is an end point, the last in a series of processes. It can as easily be viewed as the first, since planning is not activated unless some need is judged to exist. The making of judgments as to the existence, satisfactoriness, and importance of certain occurrences, results, and states of affairs is at the heart of the evaluation process, which was discussed in some detail in Chapter 10. When the discrepancy between intention and reality is sufficiently great, the need for corrective planning becomes evident. Paradoxically, therefore, evaluation rests on plans, and planning starts from, and is guided by, evaluation.

The need for further or different planning can be indicated by direct managerial evaluation [EP] of current plans and planning processes [P] or inferred from the evaluation [E] of the results [I] of properly implementing plans. The extent or seriousness of the need depends on the degree to which current status falls short of the desired status (standard) and on the importance attached to reaching the particular standard.

Planned evaluation is only one source of "feed back" to planners. Many informal evaluative reactions, with and without sound foundation in fact, reach planners, if communication avenues are open. Parents of students, community citizens, employers of graduates, receiving educational institutions, and students themselves are some common sources of informal expressions of satisfaction and dissatisfaction with various program products and processes. These evaluations can also be formally solicited to determine how widely held and well-founded they are. The results of extensive surveys, such as the National Assessment of Educational Progress (NAEP), which reports current and

changing performance in five subject areas by sex, race, region, parental education, and size and type of community, may prompt comparable local investigations using exercises released by NAEP. Public opinion polls and scholarly analyses of social-cultural problems may also suggest educational needs and shortcomings.

Whatever their source, evaluative data serve to identify for planners and policy makers whether the need is for new goals, changed goal priorities, different macro curricular offerings, revision of intended learning outcomes, different instructional strategies, or redesigned learning experiences. In some instances, improved implementation, rather than revision, of existing plans may be indicated. In other instances, formative evaluative information regarding technical planning currently in progress may lead managerial planners to make alterations in those activities. Without some kind of evaluative data, managerial planners have no guide as to where technical planning needs to be initiated or how it needs to be modified.

13.2 Planning for Evaluation [PE]

The reciprocal relation between planning and evaluation suggests that [E], and hence [PE], must occur before, during, and after [P] and [PP]. The extent to which planning or evaluation can proceed without the other depends on whether the situation is one involving the revision or reform of an established program or the initiation of a new program or institution. In the context of an on-going educational process, there exists something to evaluate and thereby provide an indication of a need for the planning of change. Where no process or product currently exists, no formal evaluation is possible. Nevertheless, a policy decision to initiate some new educational operation implies a conviction on somebody's part that such an operation is needed, i.e., an evaluation made on some basis or other, resulting in a conclusion that something desirable was lacking or not being achieved (rather than being unsatisfactory). This evaluation necessarily occurs externally to the context in which [PE] is here discussed, however, and may or may not have been deliberately planned.

The planning of evaluation requires consideration of both the evaluative product desired and the process by which it can be achieved. [PE] is concerned with three kinds of evaluand: educational results, learning outcomes, and instructional process--R, L, and $\overline{I}$. The nature of the evaluative product in each case depends in part on the evaluand itself, in part on the decision to be made on the basis of the evaluation, and in part on certain practical considerations, e.g., availability of time, money, cooperation, previously collected comparable data.

Three of the six planning processes in [PE] involve the planning of evaluative products; viz., $\overline{P}(E{:}R)$, $\overline{P}(E{:}L)$, and $\overline{P}(E{:}\overline{I})$. The specifications for an evaluation <u>product</u> must identify the evaluand, the criteria on which the evaluand is to be judged, the standards for each criterion (or the competitor(s) against which comparisons are to be made), the form of report, to whom it is to be addressed, and when it is due. These product specifications serve as a basis for planning the evaluation process and, as explained in Section 13.5, as a source of criteria for meta-evaluation, the evaluation of evaluations.

The three remaining planning processes in [PE] relate to evaluation processes, viz., $\overline{P}(\overline{E}{:}R)$, $\overline{P}(\overline{E}{:}L)$, and $\overline{P}(\overline{E}{:}\overline{I})$. In the planning of the evaluation <u>process</u>, provision must be made for selection or development of evaluation instruments; for the identification of potential subjects, objects, or events for observation; for the development of item pools for each criterion; for the sampling of subjects and items; for training and assigning observers and test administrators; for scheduling observations and testings; for scoring and analyzing results; for making evaluative judgments; and for preparing and transmitting reports. A process plan must include a time schedule, calculated backward from the due date of the report or both backward and forward from the optimal time for observation. The schedule may be in terms ranging from days to weeks or months and even to years. NAEP uses a six-year cycle, that includes three years of preparation for the test administration year (Year 0) and two years afterward, culminating in final reports.

13.3 Evaluation of Technical Plans in [EP]

If improved plans contribute to improved performance, then plans must themselves be evaluated to determine whether they are in fact improved and whether they require further improvement and in what respect. The three types of technical plans, i.e., G, C, IP, must be examined in the light of criteria appropriate to each. These criteria derive from managerial product plans, i.e., P(G), P(C), P(IP), which specify the characteristics of the desired technical plans. The managerial product plans are, of course, also subject to evaluation, but in the evaluation of technical plans, they must be taken as givens. They are sources of criteria for three of the evaluation processes in [EP], viz., E:G, E:C, and E:IP.

Managerial product plans should specify at the minimum, (1) the kind of language to be used in technical plans, (2) the frame factors that are to be taken into account, (3) the bases on which selection decisions are to be made, and (4) the bases on which that which is selected is to be organized. Evaluation of the resulting technical plans involves an independent judgment as to the satisfactoriness with which these specifications were met. Empirical evaluative evidence regarding the adequacy of plans may subsequently become available after efforts have been made to implement or use them in the succeeding technical process, but prior to that point, evaluation must be limited to confirming or questioning planning decisions by inspection of the plans in the light of the governing criteria.

Specific criteria apply to G, C, and IP, but certain general criteria are applicable to most educational plans:

A. LANGUAGE

1. Appropriateness of form (characteristics, learnings, experiences)

2. Level of specificity (macro-micro)

3. Consistency (not mixture)

B. FRAME FACTORS

1. Appropriateness for target population (age, ability, etc.)

2. Observance of regulations (if any)

3. Feasibility (cost, resources, staff, time, etc.)

4. Consistency with institutional or program missions (legitimate expectations, distinctive responsibilities)

C. CONTENT

1. Justification by preceding planning level (values-goals-curriculum-instruction)

2. Validity (epistemological, theoretical)

3. Adherence to values (philosophical, ideological, political)

4. Completeness (omissions, imbalance)

D. ORGANIZATION

1. Appropriateness of categories (specificity, parallelism)

2. Correctness of classification of components (coherence)

3. Order (priority, sequence, hierarchy)

E. DOCUMENT

1. Literary quality (organization, usage, clarity)

2. Physical quality (format, typography)

Since process plans can be empirically validated, first formatively and then, after revisions, summatively, the subjective review of their intrinsic qualities is less critical than is the case with product plans. The desirability and relative

importance of various proposed educational goals may be matters of honest disagreement, but if they are to provide a basis for the selection of curriculum content, it is essential that they be reviewed to assure that they are in fact educational goals which can reasonably be expected to be achieved through the dual processes of learning and development, within the time period available for instruction, and with individuals possessing the characteristics of those to be taught. Unrealistic goals lead inevitably to frustration in subsequent planning and implementation, and hybrid lists of non-educational responsibilities, instrumental desiderata, efficiency norms, and utilization contexts, mixed with proper educational goals, invite confusion.

Goal statements must clearly envision desired results, and curricula must clearly indicate what is to be learned. Items which describe what learners are to be or do have no place in C. As in the case of G, differences of opinions are possible as to whether something should be learned, but there should be none regarding whether it is something that can be learned. Many options exist with respect to categories and sequences, but those selected should be based on some apparent and legitimate rationale. The crucial evaluation question is, did the curriculum developers satisfactorily meet the specifications appropriate to a curriculum, and particularly those set forth in the managerial P(C)?

An analogous question applies to IP. They must be consistent with the types of learning outcomes to be achieved; deal with both the display and control functions; specify learning activities and their content, including instrumental content and the materials in which it is incorporated; make some provisions for individual differences among learners; and indicate both time durations and temporal sequence for the procedural steps that are intended to occur. On all these counts, they must be judged to be both theoretically sound and capable of being implemented under the conditions assumed to exist. The judgment is subject to later empirical confirmation, under circumstances in which a clear distinction can be made between the quality of the plans and the quality of the efforts

to implement them. Some improvement in the latter, over a period of time, may be necessary in order to demonstrate the implementability of a plan and its effectiveness. A proposed procedure with which implementers are unfamiliar, and hence possibly initially inept, cannot too hastily be judged unsatisfactory.

When $\overline{IP}$ results in a self-instructional package or other materials to be used in the instructional setting, additional product criteria are applicable. The Educational Products Information Exchange (EPIE) applies such criteria to commercially available products and provides the evaluative information at a fee to potential consumers of the products. Lists of criteria which may be applied to locally developed products or by consumers to commercial materials have been suggested by Miller (1968), by Tyler and Klein (1968), by Morrissett and Stevens (1967), and by Scriven (1974). These lists have been consolidated in Figure 13.1, which follows.

Composite Product Evaluation Criteria

I Need (b, d)

II Description
- A. Technical manual (c)
- B. Characteristics--components, appearance, time (a)

III Appropriateness
- A. For students
  - 1. School level (b)
  - 2. Kind of student (b, c)
  - 3. Student appeal of materials, content (b)
- B. For context
  - 1. Environmental relevance--community (b)
  - 2. Community acceptance--extensiveness of innovation (b)

IV Curricular Features
- A. Objectives
  - 1. General--what to be accomplished (a)
  - 2. Detailed specification (c)
  - 3. Operationally stated--behavioral (a, c)

Composite Product Evaluation Criteria
(Continued)

- 4. Consistent (c)
- 5. Value (c)
- 6. Source (c)
- 7. Compatibility (b)

B. Content
- 1. Selection basis (c)
- 2. Currency (b)

C. Structure
- 1. Selection of organizing elements-themes, processes (c)
- 2. Substantive (a)
- 3. Affective (a)

D. General considerations
- 1. Provision for individualization (b)
- 2. Compatibility with existing program (b)
- 3. Flexibility--grades, subjects (b)
- 4. Balance (b)

V Instructional Features

A. Learning theory--assumptions (a, b)

B. Teaching strategies
- 1. Rationale (a)
- 2. Activities--teacher, pupils (a)
- 3. Relation of activities, materials to objectives (c)
- 4. Learning opportunities arranged to develop behavior (c)

C. Evaluation provisions--feedback (b)

VI Implementation

A. Organizational factors
- 1. Time (b)
- 2. Space (b)
- 3. Facilities (b)
- 4. Utilization arrangements (c)
- 5. Administrative support required (b)

B. Teacher capabilities
- 1. Qualifications needed--skills (a, b, c)
- 2. In-service provision-- re-training, explicit-implicit (a, b, c)
- 3. Behavior to utilize (c)

C. Strategy--extensiveness (b)

VII Empirical Evaluation

A. Formative
- 1. Evaluation strategy in materials

Composite Product Evaluation Criteria (Continued)

development (c)
2. Evidence of formative as well as summative (c)

B. Summative
1. Evidence of effectiveness, efficiency --extent objectives achieved (a, c)
2. Validation procedures used (b)
3. Distinguish internal-external evidence (c)
4. Performance: side effects--unintended outcomes reported (c, d)
5. Evaluated with different types of students (c)
6. Performance: true field trials-evidence of effectiveness in schools (b, d)
7. Performance: true consumer (d)
8. Performance: critical comparisons (d)
9. Performance: long term (d)
10. Performance: process (d)
11. Performance: causation (d)
12. Performance: statistical significance (d)
13. Performance: educational significance (d)

VIII Practical Considerations

A. Cost-benefit analysis
1. Initial (b, c)
2. Maintenance (b, c)
3. Re-training (b, c)
4. Special facilities (c)
5. Materials re-usability (c)
6. Cost-effectiveness (d)

B. Extended support (d)
1. Market (d)
2. Dissemination--publicity, continually (b, c)
3. Appropriate channels (c)
4. Revision periodically (b, c)

Figure 13.1. Composite listing of criteria proposed for evaluating instructional products and plans by (a) Morrissett and Stevens, 1967, (b) Miller, 1968, (c) Tyler and Klein, 1968, and (d) Scriven, 1974.

13.4 Evaluation of Technical Planning in [EP]

As a process, planning at any level is susceptible to continuous monitoring (formative evaluation) to determine whether the managerial intentions, i.e., $P(\overline{G})$, $P(\overline{C})$, $P(\overline{\overline{IP}})$, are being faithfully implemented and whether the emerging results (plans) conform to expectations. After a cycle of planning has been completed, a summative evaluation in the form of a retrospective review can indicate shortcomings which might be avoided in subsequent planning efforts. As in the case of any process, satisfactory final products (in this instance, plans) are indicative of an effective process, but they do not reveal how efficient it was. A reexamination of the process itself may yield insight as to how it might have been carried out more economically with respect to time, effort, and money. The possibility must always be considered that the managerial plans for the planning processes, as well as, or rather than, their implementation, may have been inadequate. Determining whether or not such is the case is a second-order managerial evaluation, e.g., $\overline{E}{:}P(\overline{C})$.

Planning by an individual and planning by a group obviously require somewhat different evaluation procedures and criteria. Each can be evaluated both by an external observer and internally by the planner himself or by members of the planning group. In addition, group efforts can be evaluated by participant observers who maintain a detached, critical stance toward the on-going process, while still taking part in it. All planning involves people (or one person) engaging in activities in some setting over a period of time. Evaluation of planning, i.e., $\overline{E}{:}\overline{G}$, $\overline{E}{:}\overline{C}$, and $\overline{E}{:}\overline{\overline{IP}}$, can therefore consider the participants, the activities, the setting, and time. When a committee or other collectivity is involved, a phenomenon known as the "group process" becomes an added evaluand.

While specific criteria are relevant to and $\overline{G}$, $\overline{C}$, and $\overline{\overline{IP}}$, certain general ones pertain to all instances of planning:

A. PARTICIPANTS

1. Appropriateness of status (professional

lay, representativeness, expertise)

2. Qualifications (knowledgeableness, training, experiences, value orientation)

3. Availability (attendance, promptness)

B. ACTIVITIES

1. Adherence to managerial process plan (omissions-additions, digressions, sequence)

2. Quality of execution (attention to managerial product plan; awareness of, and openness to, alternatives; justification of decisions; anticipation of consequences)

C. SETTING

1. Physical (noise, lighting, comfort, resources)

2. Supporting services (clerical, technical)

D. TIME

1. Availability (freedom from conflicts; adherence to schedule and deadlines)

2. Efficiency (attention to task; delegation of sub-tasks)

E. GROUP PROCESS

1. Leadership (formal-volunteer, firmness, fairness, considerateness)

2. Participation (distribution, responsiveness, mutual respect)

13.5 Meta-evaluation [EE] and [EEP]

If it is important to evaluate planning processes, the resulting plans, the implementation of plans, and the results of implementation, then it

is equally important to evaluate these various evaluations to determine whether they were properly conducted, whether they generated the desired kinds of judgments, and whether these judgments were made available to, and used by, the appropriate decision makers. Such evaluation of evaluation is called meta-evaluation (Scriven, 1972), and two forms are identified here: (1) the evaluation of the technical evaluation in [E] and (2) the evaluation of the managerial evaluation in [EP]. The first of these meta-evaluations is accounted for in the model by the cell labeled [EE], and the second would be represented as [EEP], if another level or dimension were added to cell [EP] (cf., Johnson, 1974).

It is apparent that many other kinds of meta-evaluation are possible, since each instance of meta-evaluation is itself susceptible to evaluation, ad infinitum. Time, however, is not infinite, and there is a limit to the amount of systematic evaluation that can be carried out. Obviously, the processes and products in cells [PP] and [PE] are also potential evaluands, and reference was made in the preceding sections to $\overline{E}$:P($\overline{C}$), one of twelve processes that would be found in cell [EPP]. For all possible instances of evaluation not discussed here one generalization is applicable: judgment can, should, and usually will be passed on the worth of any process or product. It is to be assumed that any instance of evaluation that is to be systematically evaluated was planned. Both the plans and their implementation need to be evaluated. If the evaluation was planned in [PE] on the basis of criteria for good evaluation, then the plans, e.g., P($\overline{E}$:L), provide a basis for technical meta-evaluation in [EE], e.g., $\overline{E}$($\overline{E}$:L). These criteria, if valid, and others like them which may have been overlooked, form the basis for managerial evaluation of the evaluation plans themselves. Such evaluation, which would be in cell [EPE], is not meta-evaluation, but rather another instance of the evaluation of plans and planning, similar to that discussed in the last two sections.

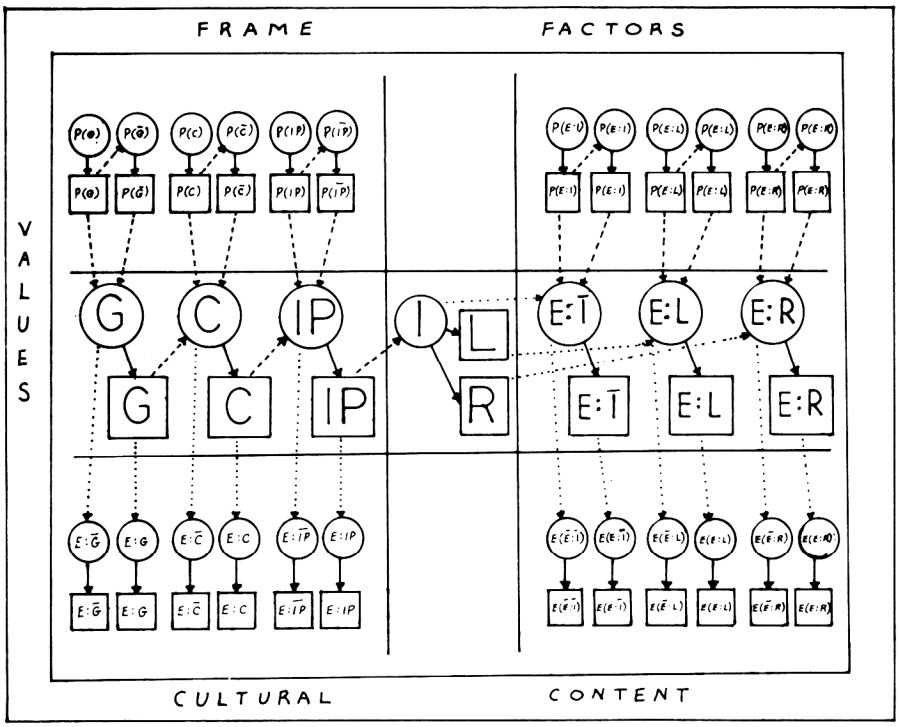
meta-evaluation is no different from any other evaluation, except that it has evaluation as an evaluand. Thus, the evaluation process is subject to formative, as well as summative, meta-evaluation. As with other processes, an important

formative consideration is implementation evaluation, i.e., Is the evaluation process in fact being carried out, and if so, are the evaluation plans being properly followed? If questions are raised concerning the appropriateness of the plans themselves, this is [EPE] rather than [EE]. In practice these two levels of evaluation may be combined, but obviously [EPE] can be done before the evaluation plans are ever implemented, whereas [EE] cannot. While there are only three evaluation processes in cell [E] to be subject to meta-evaluation [EE], there are six planning processes in cell [PE] for [EPE] to consider.

Summative meta-evaluation seeks information and makes judgments concerning such aspects of the evaluation process as whether appropriate instruments (observation guides, tests, rating forms) were constructed or obtained, distributed, and administered in proper fashion at the proper time to the proper subjects, and then the responses properly scored, analyzed, and reported to the proper decision-makers. Product meta-evaluation concerns the adequacy of those evaluation reports, not only the validity and reliability of their contents, but also the appropriateness of their form and substance for their audiences in light of the decisions they face. There are three types of such technical evaluation products, viz., E:$\overline{\text{I}}$, E:L, and E:R, that are candidates for evaluation in [EE]. Some of the most important decisions affecting the quality of these products are embodied in the six products (evaluation plans) in [PE], each of which is subject to [EPE].

If evaluation results pertaining to the processes and products of educational programs are to serve as bases for improved planning and performance, then the evaluations must be good ones. Meta-evaluation determines the extent to which evaluations are thorough, valid, and dependable bases for program improvement and serves at the same time as the basis for improving the evaluations themselves. Improved evaluation is the starting point for the processes discussed in this book, even though it here concludes the development of the rational H-model, which can now be summarized.

Chapter 14: Summary and Implications



Chapter 14
SUMMARY AND IMPLICATIONS

14.1 Examples and Glossary

Even without any of the second-order managerial functions alluded to in Chapter 13, e.g., [EPE], [EEP], the conceptual model of rational educational planning and evaluation developed in this book appears exceedingly complex, at least to someone who first encounters it in its entirety. Approached step by step, with reasonably consistent use of terminology, it is readily comprehended, due, in the main, to its symmetry and the minimal number of standard symbols. The full model could easily be reproduced by anyone who knew (1) the symbols, (2) the process and two levels of product in the [I] cell, and (3) the relation between the horizontal (technical) P-I-E sequence and the two vertical (managerial) sequences.

Nevertheless, it is one thing to be able to reproduce a diagram full of abstract symbols and another to relate these to phenomena in real educational settings. Many illustrations were provided in the preceding chapters, but it may be helpful to furnish some additional examples and organize them systematically by function (cell) and component process or product. Each symbol and occasional related terms will be defined and then illustrated to form a glossary of sorts.

P - a plan: A set of intentions regarding products to be created or processes for creating them. E.g., a list of the things intended to be learned in a course; the sequence of steps a committee intends to follow in carrying out its charge.

$\overline{P}$ - the planning process: Actions entailed in the forming of intentions, resulting in a plan. E.g., a faculty group deliberating on what topics to include in a course; an evaluator deciding how to obtain desired data.

[P] - technical planning function (cell): Includes two product-planning processes, ($\overline{G}$,$\overline{C}$), and one process-planning process, ($\overline{\overline{IP}}$), and the three resulting plans, (G, C, IP). E.g., setting the goals for a school; developing a curriculum for a program; planning a lesson.

G - an educational goal: An intended developmental outcome expressed as a human characteristic that can be developed over time through the integration of learnings. E.g., literacy; critical thinking ability (micro).

Macro goal: A category into which a number of micro goals have been classified. E.g., socialization; economic productivity; personal development; further learning.

$\overline{G}$ - the goal-setting process: Actions resulting in intentions that educational activities be directed at the development of certain human characteristics. E.g., a professional group deciding what characteristics students in a pre-service teacher education program should acquire; a school's lay advisory committee discussing what results an elementary school should strive to achieve.

C - curriculum: A structured series of intended learning outcomes. E.g., a teacher's intentions regarding what a class is to learn through an instructional unit; a list of facts, concepts, generalizations, and performance capabilities and inclinations in a course syllabus.

ILO - intended learning outcome: A micro curricular item, a specific thing intended to be learned. E.g., the concept of "plot"; the ability to thread a projector. Whether these are PLO's (potential learning outcomes) or ILO's depends on whether a decision has been made that they are to be learned and not merely learnable.

Macro curriculum: Categories into which ILO's have been grouped (structured). E.g., a subject (algebra); a course (History 101); a unit

(Westward Expansion); a topic (static electricity).

$\overline{C}$ - curriculum development process: Actions entailed in the selection of certain PLO's with the intention that they be learned and the organization of the resulting ILO's. E.g., a departmental committee deciding what topics to include in a proposed course; a teacher deciding what pupils are to learn during a class period.

IP - an instructional plan. A series of steps intended to be carried out in an instructional situation to bring about learning experiences considered likely to result in intended learning outcomes. Plan provides for display and control of learning activities and instrumental or curricular content. E.g., a lesson plan; an instructional "package."

Display: An instructional function involving exhibition of actions or substantive content to learners through an enactive, symbolic, or semantic mode of presentation. E.g., demonstrating a process; directing that a written passage be read.

Control: An instructional function involving actions that cause learners to notice, react to, repeat, or imitate something displayed, respond to questions pertaining to it, or otherwise incorporate it into behavior. E.g., supervising practice of a skill; giving an assignment.

Learning activity: Actions by learners under instruction intended to result in learning. E.g., writing, discussing; calculating.

Instrumental content: Material, toward which a learning activity is directed, that is not intended to be learned; contrasted with curricular content, which is intended to be learned. E.g., sentences typed in learning typewriting; examples encountered in acquiring a concept.

$\overline{IP}$ - the instructional planning process: Actions resulting in intentions as to what is to occur during instruction. E.g., designing a strategy for teaching a particular principle; developing a unit of programmed instruction.

$\overline{I}$ - the process of instruction: The adaptive implementation of an IP to bring about intended learning experiences. E.g., students in classroom engaged in activities under guidance of teacher; golfer following pro's directions, corrections, and example.

L - learning outcome: A cognition, performance capability, or predisposition acquired by an individual as result of experience. Actual learning outcome (ALO) may or may not correspond to ILO or curriculum item. E.g., a fact now known; a skill that can now be demonstrated.

R - educational result: A characteristic developed by an individual through the integration of learnings over time; a developmental outcome. Actual R may or may not correspond to a G. E.g., fluency in a language; critical thinking ability.

$\overline{E}$ - evaluation process: Actions involving judgments regarding the worth or satisfactoriness of a process or product (evaluand) in relation to intentions (plan). E.g., judging whether ALO's correspond to ILO's; determining extent to which planned learning experiences actually occur; deciding whether any given plan was faithfully implemented.

E - evaluation product (or report): Judgments arrived at in evaluation on basis of which action decisions can be made. E.g., report of extent to which learners give evidence of having achieved ILO; judgment as to how well an IP was executed.

Evaluand: That which is evaluated. E.g., $\overline{I}$ in instructional process evaluation, L and R in instructional product evaluation.

[E] - technical evaluation function (cell): Processes of evaluating $\overline{I}$, L, and R, designated $\overline{E}$:$\overline{I}$, $\overline{E}$:L, and $\overline{E}$:R, respectively, and their respective products, designated E:$\overline{I}$, E:L, and E:R. E.g., comparing observed instructional process with IP; testing student achievement with instrument referenced to C; noting extent to which individuals exhibit characteristics anticipated in G.

[PP] - meta-planning function (cell): Processes of planning managerially for the technical planning processes, $\overline{G}$, $\overline{C}$, and $\overline{IP}$ and for their products, G, C, and IP, designated $\overline{P}(\overline{G})$, $\overline{P}(\overline{C})$, $\overline{P}(\overline{IP})$, $\overline{P}$(G), $\overline{P}$(C), and P(IP) respectively, and the resulting managerial plans, designated P($\overline{G}$), P($\overline{C}$), P($\overline{IP}$), P(G), P(C), and P(IP). E.g., P(C)--specifications for a curriculum that is to be developed; $\overline{P}(\overline{G})$--deciding how goal setting is to be done.

[EP] - function (cell) involving evaluation of technical planning: Managerial processes of evaluating technical planning processes and resulting plans ($\overline{G}$, G, $\overline{C}$, C, $\overline{IP}$, IP), designated $\overline{E}$:$\overline{G}$, $\overline{E}$:G, $\overline{E}$:$\overline{C}$, $\overline{E}$:C, $\overline{E}$:$\overline{IP}$, and $\overline{E}$:IP, respectively, and their respective managerial products, designated E:$\overline{G}$, E:G, E:$\overline{C}$, E:C, E:$\overline{IP}$, and E:IP. E.g., $\overline{E}$:C--judging how well a developed C conforms to specifications in P(C); E:IP--a critique of an IP based on criteria developed in the $\overline{P}$(IP) process.

[PE] - function (cell) involving planning of technical evaluation: Managerial processes of planning technical evaluation processes and products ($\overline{E}$:$\overline{I}$, E:$\overline{I}$, $\overline{E}$:L, E:L, $\overline{E}$:R, and E:R), designated $\overline{P}(\overline{E}:\overline{I})$, $\overline{P}$(E:$\overline{I}$), $\overline{P}(\overline{E}$:L), $\overline{P}$(E:L), $\overline{P}(\overline{E}$:R), and $\overline{P}$(E:R), respectively, and the resulting managerial plans, designated P($\overline{E}$:$\overline{I}$), P(E:$\overline{I}$),P($\overline{E}$:I), P(E:L), P($\overline{E}$:R), and P(E:R). E.g., $\overline{P}(\overline{E}$

:$\overline{I}$)--planning how instruction is to be evaluated;

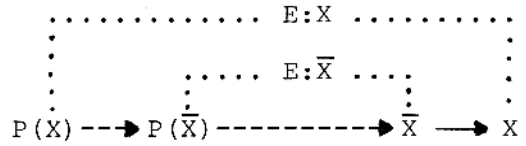
P(E:R)--specifications for a report on how well G are being achieved.

[EE] - meta-evaluation function (cell): Managerial

processes of evaluating technical evaluation processes and products ($\overline{E}$:$\overline{I}$, E:$\overline{I}$, $\overline{E}$:L, E:L, $\overline{E}$:R, and E:R), designated $\overline{E}$($\overline{E}$:$\overline{I}$), $\overline{E}$(E:$\overline{I}$), $\overline{E}$($\overline{E}$:L), $\overline{E}$(E:L), $\overline{E}$($\overline{E}$:R), and $\overline{E}$(E:R), respectively, and their respective managerial products, designated E($\overline{E}$:$\overline{I}$), E(E:$\overline{I}$), E($\overline{E}$:L), E(E:L), E($\overline{E}$:R), and E(E:R). E.g., $\overline{E}$($\overline{E}$:$\overline{I}$) -- evaluating how well the process of evaluating instruction is being carried out; E(E:L) --a critique of an evaluation report on students' achievement.

[I] - implementation function (cell): Any instance of carrying out a plan. The technical [I] is $\overline{I}$ and its products, L and R. [P] is [I] for [PP]; [E] is [I] for [PE].

Much of the complexity in the above glossary and in the model diagram to which it refers is attributable to the fact that the analysis was extended to treat planning and evaluation as implementations and to the stipulation of two levels of educational product. The fundamental pattern of relationships, which is repeated many times in the model, can be represented very simply. If "X" is taken to be any product and "$\overline{X}$" is the process which brings it into being, then the general pattern is:



14.2 Some Tentative Principles of Curriculum Development

If the model and its elaboration in the preceding chapters are sound, it should be possible to infer some generalizations relating to planning and evaluation in education. These might take the form of the following twenty principles[1] pertaining to curriculum and its development:

[1] These principles and the rules which follow were first proposed by the author at the Royal Danish School of Education in Copenhagen in 1971.

1. All curriculum development takes place in the context of an existing curriculum.

2. The various elements of an existing curriculum originated at various times and under circumstances which have since changed to a greater or lesser extent.

3. The rapidity and extensiveness of cultural change and scholarly productivity determine the frequency and extent of curriculum change that is necessary.

4. To modify a curriculum it is not enough to point to its shortcomings; it is necessary to demonstrate that the proposed modification is superior to the existing curriculum.

5. Curriculum development deals with what shall be taught, not with why it should be taught (educational goals) or with how it should be taught (instruction).

6. The adequacy of a curriculum depends both on the extent to which its proper implementation results in the achievement of adopted educational goals and on the feasibility of its being properly implemented through instruction.

7. A curriculum must be stated in terms of entities that can be learned, but not necessarily in the behavioral terms required for the evaluation of learning.

8. A curriculum must indicate any structural relationships among its included items that are of significance in instruction.

9. If an educational goal can be stated in terms of ultimate performance standards, then a synthetic approach can be followed, with micro curriculum development preceding that of a macro curriculum; if the goal cannot be stated as ultimate performance standards, an analytic approach beginning with the macro curriculum is necessary.

10. Curriculum items are of two forms, cognitions and performance capabilities (or skills), both of which universally possess, explicitly or implicitly, a concomitant affective quality.

11. Curriculum items of the cognition form differ in type with respect to level of abstraction and degree of certainty.

12. Specific curriculum items within a cognition type differ with respect to subject matter, explanatory power, and degree of elaboration.

13. Curriculum items of the performance-capability form differ in type with respect to bodily involvement and complexity.

14. Specific curriculum items within a performance-capability type differ with respect to medium and implements employed, applicatory power, and degree of precision and routinization.

15. Instructional change may occur without curricular change.

16. A change in type of curriculum item requires change in instructional method and in the form of instructional material; a change of curriculum item within a type requires a change in instrumental content.

17. The instructional implementation of a curriculum item depends upon its being verbalizable, if of the cognition form, and demonstrable, if of the performance-capability form.

18. Administrative re-arrangements may facilitate the introduction and implementation- of a curriculum modification, but such rearrangements do not in themselves constitute curriculum change.

19. Evaluation entails judgment of the comparability of observed reality and stated or inferred intents.

20. Curricular change, and educational improvement generally, requires planning, which is initiated and guided in response to evaluation.

14.3 Some Possible Rules for Curriculum Development

Theoretical principles affect practice by serving as a basis for the derivation of technological rules which can be confirmed empirically. Principles such as those listed in the preceding section might give rise to rules such as the following:

1. Determine whether a proposed curriculum change represents an addition, deletion, replacement, or amendment.

2. Determine when and for what reasons an item or category being deleted, replaced, or amended entered the curriculum.

3. Identify the changed circumstances which alter the validity of the original item or category and justify its deletion, replacement, or amendment.

4. Identify the educational goal(s) that any added, substituted, or amended curriculum item is intended to serve.

5. Determine whether the goal(s) can or cannot be expressed in terms of performance standards.

6. If the curriculum change pertains to a training program for which ultimate performance standards can be specified, analyze the performance specifications into specific (micro curricular) learnings and combine related items into appropriate macro curricular categories.

7. If the curriculum change pertains to an educational program for which ultimate performance standards cannot be specified, analyze the educational goals into accepted contributory macro curricular categories and ana-

lyze each category further into specific (micro curricular) learning outcomes.

8. State curriculum items in terms of specific cognitions or performance capabilities intended to be learned, not experiences to be provided, goals to be served, or evaluation procedures to be used.

9. Indicate any affective quality intended to accompany cognitions or performance capabilities.

10. Demonstrate for any curriculum item which is to replace or amend an existing item that it either contributes to a higher priority goal or has greater explanatory or applicatory power.

11. Ascertain that each proposed cognition is capable of being verbalized and that each performance capability can be demonstrated.

12. Specify for each cognition the intended degree of elaboration and for each performance capability, the intended degree of precision and routinization.

13. Where appropriate, suggest instructional methods, materials, and examples and administrative re-arrangements that might facilitate the implementation of a curriculum item or set of items.

14. Evaluate new curriculum content analytically by comparing it with criteria intended to be used in selecting and organizing it, and empirically, after implementation, by noting improved achievement of goals intended to be served.

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