DOCUMENT RESUME

ED 046 897   SP 004 646

AUTHOR   Webb, Clark
TITLE   The Conceptualization of Prescriptions for Teaching.
PUB DATE   71
NOTE   37p.; Paper presented at annual meeting, AERA, New
                 York, 1971

EDRS PRICE   EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS   *Criteria, *Literature Reviews, *Models, *Teaching

ABSTRACT
                 The body of recent prescriptive literature on
teaching was analyzed to develop a conceptual model for ordering
prescriptive thought about teaching, imposing a rational order on
diverse extant frameworks for viewing teaching. Seven existing
schemata for ordering thought about teaching were summarized. Three
dimensions of the teaching-learning process were identified and a
question formulated from each for use as criteria for comparing the
various formulations found in the literature. The three dimensions
are 1) the learning: What is the nature of the learner? 2) the
teaching-learning situation: How should teaching proceed? and 3) the
goal: What should be the outcome of teaching? The taxonomic category
system generated consists of the following four frameworks: 1)
Teaching as Self-enhancement; 2) Teaching as Intellectual
Achievement; 3) Teaching as Technology; and 4) Teaching as the
Management of Contingencies. (A two-page bibliography is included
with the description of each of the four positions.) (JS)

THE CONCEPTUALIZATION OF PRESCRIPTIONS FOR TEACHING

Clark Webb
Brigham Young University

(Presented at AERA Annual Meeting,
New York, Feb., 1970)[sic]

INTENT OF THE INQUIRY

> One does not discover by observation what teaching is. Rather
> he decides how he wants to conceive of teaching--what he wants
> to call by the term teaching and/or what conditions have to be
> met before he is willing to say that teaching is taking place.
> In short, a concept of teaching is a theoretical construct, not
> an observed phenomenon. (Henderson, 1965, p. 384).

The above statement by Henderson implies that any attempt to deal sys-

tematically with the concept of teaching is bound to be a complex effort. The

real-life referent for the concept "teaching" is considered to be so multi-

form and various that precise definition of the act is, perhaps, an unattain-

able goal. An examination of current literature on the nature of instruction

yields a welter of different recommendations, prescriptions, suggestions, and

pleadings regarding how teaching ought to proceed. The present conceptual

inquiry seeks to provide a schema or cateogry system for ordering a large por-

tion of these diverse formulations.

Existing Frameworks for Considering Teaching

A number of schemata for ordering thought about teaching appear in the

literature of education. Understanding their nature will provide a context

into which the framework advanced herein can then be fitted. Seven of these

are summarized below. An assumption is made that the reader is familiar with the vocabulary employed, at least generally, by the authors of these conceptions; consequently, only minimal elaboration is made beyond the names of the categories identified. (If further elaboration is desired, see List of References at end of the paper.)

-i-

Gage (1963, 1964) has suggested the following framework, based on families of learning theory:

1. Teaching as Conditioning
2. Teaching as Identification (Model-providing)
3. Teaching as Cognitive Restructuring

-ii-

De Cecco (1968) has categorized seven "models of teaching":

1. Basic Teaching Model
2. Computer-Based Teaching Model
3. Model for School Learning
4. An Interaction Model
5. The Socratic Model
6. The Jesuit or Classical-Humanist Model
7. The Personal Development Model

The basic teaching model of De Cecco is Glaser's 1962 formulation of the instructional process: "(1) Instructional Objectives, (2) Entering Behavior, (3) Instructional Procedures, (4) Performance Assessment" (De Cecco, 1968, p. 11). The model for school learning (#3) is the work of John Carroll (1963). Models five, six and seven are considered to be "historical teaching models."

-iii-

Harris (1969), in a framework tied closely to learning theory, has suggested four "systems models" of teaching:

1. Stimulus-Response
2. Environmental Adaptation
3. Discovery
4. Verbalizing

The second model refers to teaching activities intended to help the learner interact with his external environment. Exploration of real things by students under the guidance of the teacher is the preferred mode of operation. The last framework, "verbalizing," is similar to De Cecco's "personal development" model. That is, the emphasis is on the students' acquiring "new insight, feelings of adequacy and autonomy" (p. 6). The task of the teacher is to question, to listen, to emphasize and to encourage.

-iv-

A volume entitled Teaching: Vantage Points for Study contains Hyman's (1968) seven observational frameworks:

1. Communications
2. Cognitive and Intellectual Behavior
3. Emotional Climate
4. Social Climate
5. Games
6. Aesthetics
7. Strategies

The "communications" viewpoint is essentially the process which, diagramed in its most fundamental aspect, looks like this:

Sender (Source) encodes	Message or Channel	Decoded by Receiver (Destination)
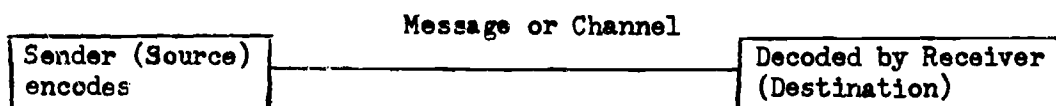
The "games" vantage point is teaching considered in light of elements abstracted from the field of athletic games. "Aesthetics" as a model allows one to consider teaching "with the aid of such concepts as beauty, harmony, balance, rhythm, tempo, and form" (p. 329). Finally, the "strategies" viewpoint is a cognitively-oriented teaching method, which proceeds deliberately to achieve certain predetermined goals.

-v-

Six approaches to teaching are identified by Macdonald (1965) in an
article entitled "Myths About Instruction":

1. Learning Theory
2. Human Development
3. Structure of Disciplines
4. Modes of Inquiry
5. Interaction Analysis
6. Rational Decision-Making

Macdonald refers to the above six frameworks as "myths." They are
extant in the literature, but too uncertain to be adequate as grounds for pre-
scribing teaching practices. His point is that one cannot prescribe a parti-
cular teaching modus operandi according to any of the six conceptions because
there is not available enough evidence to support such a prescription. The
myth termed "modes of inquiry" relates to what scholars and investigators in
a particular discipline do when they study their field, the prescription fol-
lowing that public school students should engage in the same activities (a
prescription Macdonald rejects). The "rational decision-making" position is
congruent with De Cecco's "basic teaching model" (see ii above).

-vi-

B. Othanel Smith (1963) identified three current "conceptions of instruc-
tion":

1. Stimulus-Response
2. Interaction
3. Eclecticism

Smith's "eclecticism" category results from borrowing " . . . from both
the interactive (#2) and stimulus-response (#1) models and from clinical psy-
chology, combining these with common-sense observations" (p. 295). His res-
ponse to each of the above positions is negative--Smith maintains that more
descriptive and analytical work should be done before prescribing methods.

Thelen (1966) presents a broad schema in which he views teaching as:

1. Personal inquiry
2. Group investigation
3. Reflective action
4. Skill development

The first three of these models are assumed to grow out of "three funda-mental quests going on in the world of man." (p. 77). The fourth is a prac-tical consideration and represents the mastery of basic learning, e.g., read-ing, writing, listening abilities, etc.

METHOD

The Major Question

The following is the question which the present paper purports to answer, at least partially: How can one classify prescriptions (recommended practices) for teaching given (1) the incalculable complexity of the pheno-menon, and (2) the requirement that any category system must be at least mini-mally congruent with the reality it purports to order? The answer to this question, let it be noted, is not a theory of teaching, but a conceptual schema by which already existing views of teaching can be summarized. The posing of the question and the subsequent inquiry represent examples of the "macroana-lytical approach" to thinking about teaching suggested by Hermanowicz (1969) recently.

The Taxonomic Notion

The attempt to answer the major question forces one to focus on a prior question, related to the major one: In order to classify prescriptions for teaching, what criteria ought to be established for use in comparing the vari-ous formulations? This appears, to the writer, to be a generally unmasked

question by those who provide frameworks for viewing teaching. Their concep-
tions have little or no taxonomic aspect to them. The categories are a list
of analogs--with no underlying or basal unifying theme. That is, each one of
the members of a given set of models (e.g., Harris' "stimulus-response," "envi-
ronmental adaptation," "discovery," and "verbalizing" conceptions) is basically
independent of the other members, except for the common factor of their teaching-
relatedness. There is not a dimensional notion (see below) associated with the
above formulations.

The criteria established by which schemata can be compared should solve
(or at least attempt to solve) what Gage (1969) calls "the problem of dimension-
alization--the problem of finding ways to compare methods $\int$ frameworks or models
of teaching in the present context$\overline{7}$ along basic underlying dimensions so that
the differences between them can be more clearly identified . . . ." (p. 1450).
The present conceptualization attempts to accomplish that end.

The Dimensions

The dimensions identified for use in the present formulation were adapted
from Gordon (1968), although similar ideas are found in other writings (e.g.,
Loree, 1965, pp. 30-35). The dimensions represent the salient variables or
characteristics which inhere in the teaching-learning situation. Presumably
any prescription for teaching would make reference to these three elements and,
in fact, the various formulations of teaching found in educational and psycho-
logical writing generally treat the dimensions, both explicitly and implicitly.
The dimensions are (1) the learner, (2) the teaching-learning situation, and
(3) the goal or outcome of teaching. Differences in approach among different
prescriptions were discovered by putting each of the three dimensional charac-
teristics in the form of a question and noting distinctions among the various
answers given in the literature. The questions associated with each facet are,
1) the learner: What is the nature of the learner? (2) the teaching-learning

situation: How should teaching proceed? (3) the goal: What should be the outcome of teaching? See Figure 1.

One way to conceptualize the answers given to the above three questions is to establish a continuum between polar opposites and to identify positions (ranges of ansers considered as a single category) on that continuum. The impossibility of eliminating (at least at this stage of the inquiry) what Mehrabian (1968) termed "observer selectivity" is recognized. Such selectivity (p. 2) ". . . is an inherent aspect of initial attempts at the description of a novel, or as yet uninvestigated or unsystematized, set of phenomena." Perhaps a modicum of justification is conferred on the effort of this study by the same author's following observation (one word has been changed to relate the statement to the field of education): "The /educational/ field is so chaotic at present that all of our classificatory, organizational attempts are to be welcomed." (Mehrabian, 1968, p. 19).

A Note on Conceptual Models

The enterprise of conceptual ordering of real-life phenomena is risky. Concepts are clothed with words and words are tricky. They are so because the referent for them is not uniformly apprehended by those who read the words. The historic problem of discriminating among the referent, a human concept of that referent, and the term or symbol assigned to name the concept is a knotty one in any discipline (see Ogden and Richards, 1966, and Woodruff, 1961); in a field such as education where the referents are generally complex sequences of human behavior, the problem appears practically insoluble. Different referents are given the same name, the same referent (or an essentially similar one) is given different names, and the inconsistent and discrepant use of terms reveals that educational theorists hold widely differing concepts of the referential phenomena.

An arresting paragraph by Paul Brandwein (1966, p. 1) describes the dilemma alluded to above:

> We seem always to be seeking simplified editions of vast and compli-
> cated matters. We seek to make sense. We want, wherever it is intel-
> lectually possible, to bring all ideas under one roof. Our need to
> seek relationships, to see structure, is almost always appealing, often
> engaging, often dangerous; nevertheless, it is with us. We abstract,
> we infer, we generalize, we conceptualize, we hypothesize, we theorize.
> We search for some kind of handle to get at whatever we seek to under-
> stand. If we cannot strike through irrelevant detail, we may suppress
> the detail in order to come to grips with events which to our individual
> psychology seem orderly. In a word, we seek uniformity within diversity,
> and if a good sound theory is not available, we grasp at a "bold" hypo-
> thesis, or even a right-hand rule. Of course, the order may be only in
> our own minds; the price of seeking order may be self-deceit.

The purpose of this paper is not to develop a theory of teaching, nor even to evaluate existing systematic formulations about teaching. It does puport to provide a conceptual "handle" by means of which the controlling ideas and the people involved in theorizing about the teaching-learning situation may be apprehended and related in meaningful ways.

All attempts to order even a modest portion of the confusing array of material purporting to explain teaching are bound to have at least one (and probably not more) element in common: the suppression of some detail and empha-sis of major concepts. Any schema evwolved to aid comprehension of phenomenal complexity proceeds, by definition, it appears, to select certain features of the phenomena under scrutiny and ignore others. In a practical sense the "good-ness" or helpfulness of any simplifying analogy or metaphor is determined by the perception of those who attempt to employ it. That is, validation of a model or paradigm is a process of comparing the model with one's perception of the reality it is supposed to represent. A conceptual model is not subject to relatively unambiguous validation the way that a testable hypothesis state-ment is.

Any representation of some part of reality must always, to some degree,
be unfaithful to that reality; the task is always to obtain more utility from
the simplifying nature of the representation than is lost by suppression of
"extraneous" detail. Hyman (1968, p. 4) offers the following warning:

> But in spite of the help they offer, analogies also yield problems.
> The very path that leads to easy and quick understanding can also lead
> to error and confusion if we are not careful. To avoid trouble, we must
> be judicious in the use of analogies. . . . Most analogues have only
> partial correspondence with the original situation. Trouble arises when
> we accept and act upon complete correspondence when, in fact, it cannot
> be demonstrated. The analogy that does not hold completely is poten-
> tially misleading. We must drop it before we stretch it beyond its
> helpful limits. If not, we come to believe that certain relationships
> exist when they do not.

Nevertheless, E. G. Boring (1959, p. 385), writing of models in psychology,
claimed, "a model, being only 'as-if,' does not need to be 'true' in the sense
of being a stated relation between terms that have specific 'thinghood': the
model summarizes data and that is its purpose." The proper question to ask of
a model or other data-reducing analogy is not, "Is it ultimately true?", but
"Is it heuristically true?" An investigator, in effect, questions himself--
"Am I able to do things I believe ought to be done by employing this model (or
whatever) that I would not be able to do without it?" Goodness of fit, not
ultimate truth, is the modest goal of the model-builder.

RESULTS

The result of the inquiry, a continuum with four positions specified, is
presented below and summarized in Figure 1.2 (at end of paper). The language
used to describe the positions on each dimension is that used by the proponents
of the particular position. Its use in the present paper is intended to be
descriptive and not value-laden.

Considering the dimensionalization of each position to be uniform, that

is, each position related similarly to the others on each dimension, allows one

to represent the four identified positions visually as in Figure 1.2. This

graphic representation is intended to show that prescriptions for teaching can

be ordered--in a manner sufficiently isomorphic with the actual ideas from the

literature to be valuable--into four main categories, each one representing a

self-consistent set of answers to the three dimension questions posed above.

THE CONCEPTUAL MODEL

Position One: Teaching as Self-enhancement

I Overview

One of the most widely espoused of the themes for prescribing
teaching practices may be labeled "teaching as self-enhancement."
Typically the motif of this theme is its insistence on the determina-
tive nature of the individual's perceptual field at any given moment.
The theoretical construct of the perceived self is central in any
formulation of this position. The question, "What is the nature of
the learner?", is regarded by advocates of this metaphor as the key
one of the three dimension questions. Principles relating to teach-
ing method and desirable outcomes (dimensions two and three) are
conceived as flowing from the central premise, viz., man is a free,
responsible individual of infinite worth who grows by changing his
perceptions of and attitudes toward his person- and object-environment.

Given the central importance of personal meaning (as contrasted
with objective or non-personal meaning), this position emphasizes
exploration and discovery by the individual in his learning acts.
Such a position generally results in the condemnation of several con-
ventional procedures of the public schools, e.g., highly structured
learning environments or emphasis on student "ingestion" of pre-
arranged material. Teaching prescriptions then take the form of
recommending a freeing and expanding of opportunity for exploration
and discovery of personal meaning. The enrichment of available
resources, the enhancement of perceptual experiences are seen as
necessary adjuncts to the teaching process. It is at this point that
many ideas of those holding this position are at variance with those
of the technological or contingency management frameworks treated in
later sections. Those who see teaching as essentially strengthen-
ing the self-concept of the learner are repelled by the notion of
highly-structured and typically cognitively-focused learning materi-

, as opposed to affectively-focused,

ials. They recommend a more fluid, open, and potentially changeable classroom ambience than that envisioned by adherents of the other three positions.

A. Dimension One: What is the Nature of the Learner?

A complex human being who interacts with others; a being capable of free choice, who is accountable for his actions and decisions; one for whom love, affection, and warmth are crucial at any time and in any circumstance; one who is in the process of becoming always.

B. Dimension Two: How Should Teaching Proceed?

Interaction among pupils and between teacher and pupil essential; teaching should ". . . focus on facilitating changes in ways the learner sees and feels about himself. . . ." (Perkins, 1957, p. 453); the proffered learning opportunity is a chance to explore mutually (teacher and pupil) its dimensions; teacher-provided structure of learning opportunities to be minimal; ". . . teaching a process of helping children explore and discover the personal meaning of events for them." (Combs, 1962a, p. 70).

C. Dimension Three: What Should be the Outcome of Teaching?

The enhancement of the self-concept; a "self-actualizing" person; a learner who is open to experience; one who recognizes and cherishes his autonomy and freedom; one who facilitates growth in others and consequently seeks intense interactive occasions with others; individuals conscious of the importance of affective goals in interpersonal relations.

II Reference: Teaching as Self-enhancement

This section.

(Complete bibliographic citations are given at end of ~~paper~~. The author-date references below are intended to provide a kind of overview for those readers who are familiar with the authors cited)

Banaka (1970)
Bills (1963, 1967)
Brookover, Thomas, and Paterson (1964).
Buytendijk (1953)
Clark and Beatty (1967)
Combs (1962a, b, 1965)
Combs and Snygg (1959)
Drews (1966)

Jersild (1960)
Kelley (1962)
Maslow (1962)
Miller (1970)
Perkins (1957)
Rogers (1962, 1967a, b, 1969)
Snygg (1966)
Washington (1970)

Position Two: Teaching as Intellectual Achievement

I Overview

      Prescribing for teaching when it is considered as intellectual
achievement is a matter of asserting the primacy of the intellectual
claim on the curriculum (see King and Brownell, 1966, chapter one).
The essential and controlling nature of man's cognitive operations is
asserted. This conception of teaching casts the teacher in the role
of mentor or tutor, rather than in the role of therapist or technician
(compare this idea with the corresponding ideas from the other three
categories of the model).

      Smith (1963a, p. 296) represents this view when he notes that
although the teacher has certain personal obligations to his pupils,
"still the determining factor in the teacher's behavior is not his
understanding of the student but his comprehension of the subject
matter and the demands which clear instruction in that subject matter
make upon him." Thus self-enhancement as an end of the schooling pro-
cess are not wholly neglected, but is considered subordinate to the
learning of systematic, organized knowledge.

      There are also differences between the present category and the
other two categories following, "teaching as technology," and "teach-
ing as the management of contingencies." The technologists of teach-
ing give relatively less attention to the underlying structure of a
subject area, with its attendant process of inquiry; instread, they
concern themselves more with the programming sequence appropriate to
a particular unit of instruction. Those who conceptualize teaching as
a matter solely of stimulus and reinforcement of responses (the manage-
ment of contingencies) also pay less attention to the concerns of the
present category—structure, mode of inquiry, intellectual learning—
and focus on observable behavioral modification via operant condition-
ing techniques.

      A corollary to the concept of the primacy of the intellect is
the centrality of the disciplines of knowledge to the enterprise of
teaching. The clear separation of curriculum from instruction becomes
difficult at this point. For example, Phenix, in an article entitled
"The Use of the Disciplines as Curriculum Content" (1962), maintains
that the disciplines of knowledge are at once subject-matter and vehicle
for instruction. This is so because, according to Phenix (p. 273),
" . . . the distinguishing mark of any discipline is that the know-
ledge which comprises it is instructive—that it is peculiarly suited
for teaching and learning."

      Another concept embedded in this category is the governing
nature of the manner by which inquiry in a field is pursued. "Modes
of inquiry" characteristic of a particular field are seen as determina-
tive relative to the possibility of mastery of that particular subject.
The contention is that the teaching enterprise must take into account
the nature of the modes of inquiry when teaching patterns are prescribed.
Schwab (1964) equates inquiry with investigation. He says (p. 5)

". . . it /inquiry/ is a mode of investigation which rests on conceptual innovation, proceeds through uncertainty and failure, and eventuates in knowledge which is contingent, dubitable, and hard to come by." Assisting students to comprehend both the process of investigation which characterizes a given field of study, as well as the conclusions characteristic of that field of study is deemed important by proponents of the present category.

Yet another concept predominating in this view is that inquiring man is seen to be pre-eminently the symbolizing animal (see King and Brownell, 1966, chapter one). As a manipulator of symbols, man must be taught in such a way that his mastery of rational forms of decision-making is assured. Phenix (1962) considers the ability to deal with symbols the pre-eminent human characteristic, calling it (p. 275) the "index of intelligence." An education which fits man for handling symbols will find a central place for the disciplines of knowledge, ". . . for the disciplines are the intellect's systems of symbols and thought; the means by which men's minds master nature and grasp ideas" (King and Brownell, 1966, p. 24). This position does not equate schooling with education, but sees the former as contributing to the latter, which is the larger whole. Consequently schooling is focused and systematically organized and pursued.

Finally, teaching as intellectual achievement is characterized by the use of the vocabulary of classical learning, of the liberal arts, and of the Western philosophers. Those educators who profess to see a clear historical link between our society today and that of Greece in the fifth century B.C. will typically prescribe procedures for and outcomes of teaching based on their perceptions of the nature, and adequacy of vision provided by that period. (See for example, Hutchins, 1953, 1968; Koerner, 1959; King and Brownell, 1966).

An examination of the reform plans of several of the recent prominent critics of the public schools, i.e., Bestor, Koerner, Rickover, and others, reveals an emphasis on teaching as intellectual achievement. These critics' outraged cries against what they term "soft" pedagogy including a life-adjustment curriculum, usually includes some form of evidence demonstrating the lack of intellectual rigor, a de-emphasis of the importance of the acquisition of symbolic systems, and a generally hostile climate to scholarly attainment.

A. Dimension One: What is the Nature of the Learner?

"A neophyte in . . . the community of discourse" (King and Brownell, 1966, p. 121); ". . . the symbolizing animal. He reasons. He remembers. He reflects. He meditates. He imagines. He culti-vates his mind. . . ." (King and Brownell, 1966, p. 20); an appren-tice in the craft of Reason; one who increases his self-respect by augmenting his cognitive knowledge; a pupil who strives to master a discipline or body of content.

B. Dimension Two: How Should Teaching Proceed?

Concern with cognitive learnings; organization and hierarchy of content important; the teacher's comprehension of the subject mat-

ter the determining factor in classroom operations (Smith, 1963);
"discipline centered rather an child or society centered."
(Goodlad, 1966); ". . . curriculum is a planned series of encoun-
ters between a student and some selection of communities of dis-
course." (King and Brownell, 1966, p. 121); primarily verbal and
logical (Smith, 1960).

C. Dimension Three: What Should be the Outcome of Teaching?

Meaningful verbal learning (Ausubel, 1967, 1969); individuals who
have mastered a field of subject-matter; persons ". . . disciplined
in symbolic behavior. . . ." (King and Brownell, 1966, p. 21); the
development of intellect; understanding the structure of a discipline.

II References

Ausubel (1967, 1969)	Koerner (1959)
Barzun (1959)	Phenix (1962)
Bestor (1968)	Ripple and Rockcastle (1964)
Gage (1964)	Schwab (1962, 1964)
Goodlad (1966)	Smith (1960, 1963, 1967)
Hutchins (1953, 1968)	Smith, M. (1966)
King and Brownell (1966)	Wann (1962)

Position Three: Teaching as Technology

I Overview

Teaching as technology focuses primarily on the systematic appli-
cation of principles and concepts to the educative process. The prin-
ciples and concepts to be applied are those provided by behavioral sci-
ence (Glaser, 1965a, 1966).
Some feeling for the domain carved out by the educational techno-
logists is gained by a perusal of the following list of selected article
titles from the journal, Educational Technology, volume eight (1968):

"Educational Technology as Instructional Design"
"A Cybernetic System Model for Occupational Education"
"Technology and Educational Planning"
"Components of a Cybernetic Instructional System"
"The Computer and Education"
"Media Technology and Teacher Education"
"Systems Approach? What Is It?"
"A Set of Procedures for the Planning of Instruction"
"Human Factors Engineering of Educational Systems"

Glaser (1965, p. 782) epitomizes the tendency of this category when
he writes, "The array of concepts involved in the pre-instructional
measurement of aptitudes, readinesses, and diagnostic measures of
achievement must be systematized for theoretical development and for
use in instructional design." (See also Heinich, 1966; Merrill, 1968).

Perhaps the single word that best ~~ures the spirit of this
category would be the adjective "systema...." No prescription for
teaching which falls within this category is without at least some
allusion to the need for rendering the act of instruction into its
presumed components (rational, logical, and psychological) and sys-
matically accounting for each one of these identified elements to
produce the desired result, pupil learning, the only valid criterion
of teaching. As one might expect, concepts of system engineering
are prominent in prescriptions related to this position.

An applicative or engineering orientation, even though directed
toward a human (as distinct from a material) enterprise, brings with
it the vocabulary of physical processes. Predominant in the thinking
that defines the view of teaching as technology is the notion of man-
machine interaction. The learner should become a more efficient
processor of data; "the brain of man /should/ be regarded as a . . .
part of a knowledge retrieval system through which man can obtain
access to the entire available system of coded knowledge." (Travers,
1968, p. 100).

There appear to be four closely-related concepts which underly
a number of prescriptions which are offered in the educational litera-
ture of teaching as technology:

1) A faith in the relevancy and validity for teaching of the
process and products of behavioral science research.

2) The view of teaching-learning as a reciprocal cause-effect
relationship (for a contrary view--but within the technology
framework--of this point, see Scandura, 1966).

3) A reductionistic view of the phenomena of teaching, i.e.,
the assumption that they can be separated profitable into
constituent parts and examined element by element.

4) (Corollary to number three) A belief that teaching (or
instruction, as it is usually called when conceived of as
a technology) must be consciously designed, component by
component. This corollary seems to lead into the field of
programed instruction.

A. Dimension One: What is the Nature of the Learner?

An individual who processes information; one who can modify his
responses if the environment is modified; a being capable of bene-
fiting cognitively from systematic teaching; one whose terminal
(end-of-instructional period) behavior in a formal instructional
setting can be specified and altered through a step-by-step use
of behavioral science-generated learning principles.

B. Dimension Two: How Should Teaching Proceed?

"The function of instruction is the control of the external condi-
tions of the learning situation." (Gagne, 1967, p. 296); teach-
ing a process-product dyad (Mitzel, 1970); through empirically-designed
sequences of stimuli aimed at provoking uniform student responses;
time and efficiency considered important; systems approach predomi-
nates; programming predominates; task analysis predominates.

C. Dimension Three: What Should be the Outcome of Teaching?

Changed response capabilities relative to the instructional task;
persons who have mastered specified learning outcomes in (primarily)
cognitive and psychomotor domains; exalts man doing, rather than
man becoming; outcomes ought to be differentiated response capa-
bilities within the learner; empirically validated learning is
the true outcome of successful teaching.

II References

Anderson (1967)   Mager (1962, 1967)
Bugelski (1964)   Merrill (1968)
Corey (1967)   Mitzel (1970)
De Cecco (1968)   Rothkopf (1968)
Ericksen (1967)   Ryans (1965)
Gagne (1965, 1967)   Scandura (1966)
Glaser (1965a, b)   Smith and Smith (1966)
Heinich (1965, 1968)   Travers (1966, 1968)
Lumsdaine (1963, 1   Twyford (1969)
Lumsdaine and Glaser (1960)   Ullmer (1968)
                                       Woodruff (1969)

Position Four: Teaching as the Management of Contingencies

I Overview

        With this view of teaching, experimental science of human beha-
vior comes into its own. The prevailing concept of the category is
the extension of fundamental "laws" of learning to all forms of com-
plex human behavior, including school learning.
        This framework is not as widely shared among educators as the
the other three identified. Nevertheless the educational implica-
tions of the view have been treated as fully perhaps as any of the
other categories. In the view learning is considered central to an
adequate understanding of the human organism. Basically all human
behavior represents learning. Furthur, all learning is the result of
the same fundamental process. Finally, more complex behavior (learn-
ing) is considered a function of the combination, integration, and
interaction of simpler behaviors. The ultimate mechanisms respon-
sible for human learning are the processes known as conditioning--

both classical (respondent) and instrumental (operant). Skinner (1968, p. 5) defines teaching as " . . . simply the arrangement of contingencies of reinforcement." Any time the organism learns something, the occasion is due precisely to the fact that stimulus properties and reinforcement contingencies were appropriate to increase the probability of occur nce of the particular something learned.

A primary characteristic of this view is the prominence of the reductionistic principle, i.e., that the ultimate facts of behavior are reducible to micro-level processes and mechanisms. Allied to this concept is the notion that the actions of persons are determinative, not one's interpretation of them in terms of mental state, e.g., motivated, apathetic, eager, rebellious, etc. The "emitted" responses of persons tells us all we need to know.

The governing mode of inquiry among those who adopt this view is that of experimental science. There exists a science of behavior—as precise for its purposes as astronomy is for its purposes—which allows us to " . . . develop a technology for routinely producing superior human beings. . . ." (Homme, et al., 1968, p. 431). The technology referred to is that of instrumental conditioning—managing the contingencies of reinforcement.

A. <u>Dimension One: What is the Nature of the Learner?</u>

A complex, responding organism; one whose behavior is determined by events outside of the organism itself; one capable of being conditioned to emit virtually any desired behavior: love, joy, etc.; one who can control his future by controlling his environment; one whose machine-like properties are salient (Skinner, 1953).

B. <u>Dimension Two: How Should Teaching Proceed?</u>

". . . Teaching is simply the arrangement of contingencies of reinforcement." (Skinner, 1968, p. 5); "arranging the environment so that one gets what one wants." (Homme, et al., 1968, p. 425); students' terminal behavior should be identified, stimulus conditions and reinforcement contingencies controlled, and the terminal behaviors installed. (A description of the operations of instrumental or operant conditioning would be appropriate here, but is omitted).

C. <u>Dimension Three: What Should be the Outcome of Teaching?</u>

Modified behavior patterns—predictable and stable; increased cognitive knowledge; a changed capability of learner response repertoire; practically any human behavior can be installed, thus <u>any</u> outcome desired could be achieved, given control of the stimulus and response patterns affecting the learner.

II <u>References</u>

Bandura (1961)   Keller (1966)
Corey (1967)   Kimble (1967)
Evans (1968)   Mowrer (1960)
Ferster and Ferrott (1968)   Reynolds (1968)
Gray (1969)   Rogers and Skinner (1956)
Homme, C'de Baca, Cottingham   Ross (1967)
    and Homme (1968)   Simon (1969)
Isaacs (1960)   Skinner (1948, 1953, 1968)
                                       Staats (1968)
                                       Tighe (1968)

LIST OF REFERENCES FOR POSITION ONE: TEACHING AS SELF-ENHANCEMENT

Banaka, William H. "Human relations training: the cutting edge of the motivation to learn." Paper presented at the annual meeting of the American Educational Research Association, Minneapolis, 1970.

Bills, Robert E. "Insights for teaching from personality theory: intelligence and teaching." In L. Berman (Ed.), The nature of teaching. Milwaukee: School of Education, University of Wisconsin, 1963.

Bills, Robert E. "The classroom teacher, mental health, and learning." In Association for Student Teaching, Mental health and teacher education. Forty-sixth Yearbook, Association for Student Teaching. Washington: The Association, 1967.

Brookover, Wilbur B., Thomas, Shailor, and Paterson, Ann. "Self-concept of ability and school achievement." Sociology of Education, 1964, 37, 271-278.

Buytendijk, F. J. J. "Experienced freedom and moral freedom in the child's consciousness." Educational Theory, 1953, 3, 1-13.

Clark, Rodney, and Beatty, Walcott. "Conceptual framework for teacher education." In Association for Student Teaching, Mental health and teacher education. Forty-sixth Yearbook, Association for Student Teaching. Washington: The Association, 1967.

Combs, Arthur W. (Ed.) Perceiving, behaving, becoming. Washington: Association for Supervision and Curriculum Development, 1962a.

Combs, Arthur W. "A perceptual view of the adequate personality." In A. Combs (Ed.), Perceiving, behaving, becoming. Washington: Association for Supervision and Curriculum Development, 1962b.

Combs, Arthur W. The professional education of teachers: a perceptual view of teacher education. Boston: Allyn and Bacon, Inc., 1965.

Combs, Arthur W., and Snygg, Donald. Individual behavior: a perceptual approach to behavior. New York: Harper and Row, Publishers, 1959.

Drews, Elizabeth Monroe. "Self-actualization: a new focus for education."
        In W. Waetjen and R. Leeper (Eds.), Learning and mental health
        in the school. Washington: Association for Supervision and Cur-
        riculum Development, 1966.

Jersild, Arthur. Child psychology. (5th ed.) Englewood Cliffs, N. J.:
        Prentice-Hall, Inc., 1960.

Kelley, Earl C. "The fully functioning self." In A. Combs (Ed.), Per-
        ceiving, behaving, becoming. Washington: Association for Su-
        pervision and Curriculum Development, 1962.

Maslow, Abraham H. "Some basic propositions of a growth and self-actual-
        ization psychology." In A. Combs (Ed.), Perceiving, behaving,
        becoming. Washington: Association for Supervision and Curric-
        ulum Development, 1962.

Miller, William C. "Using equipment, materials, and facilities to develop
        humane capabilities." In M-M.Scobey and G. Graham (Eds.), To
        nuture humaneness. Washington: Association for Supervision and
        Curriculum Development, 1970.

Perkins, Hugh V. "Changing perceptions of self." Childhood Education,
        1957, 34, 82-84.

Rogers, Carl R. "Toward becoming a fully functioning person." In A.
        Combs (Ed.), Perceiving, behaving, becoming. Washington: As-
        sociation for Supervision and Curriculum Development, 1962.

Rogers, Carl R. "The facilitation of significant learning." In L. Siegel
        (Ed.), Instruction: some contemporary viewpoints. San Francisco:
        Chandler Publishing Co., 1967a.

Rogers, Carl R. "What psychology has to offer to teacher education." In
        Association for Student Teaching, Mental health and teacher edu-
        cation. Forty-sixth Yearbook, Association for Student Teaching.
        Washington: The Association, 1967b.

Rogers, Carl R. Freedom to learn. Columbus, Ohio: Charles E. Merrill
        Publishing Co., 1969.

Snygg, Donald. "A cognitive field theory of learning." In W. Waetjen
        and R. Leeper (Eds.), Learning and mental health in the school.
        Washington: Association for Supervision and Curriculum Develop-
        ment, 1966.

Washington, Bennetta B. "A social imperative: respect for the individual."
        In M-M.Scobey and G. Graham (Eds.), nurture humaneness. Wash-
        ington: Association for Supervision and Curriculum Development,
        1970.

LIST OF REFERENCES FOR POSITION TWO: TEACHING AS INTELLECTUAL ACHIEVEMENT

Ausubel, David P. "A cognitive-structure theory of school learning." In
        L. Siegel (Ed.), Instruction: some contemporary viewpoints.
        San Francisco: Chandler Publishing Co., 1967.

Ausubel, David P. (Ed.) Readings in school learning. New York: Holt,
        Rinehart and Winston, Inc., 1969.

Barzun, Jacques. The house of intellect. New York: Harper and Brothers,
        1959.

Bestor, Arthur E. "A crisis of purpose." In E.C. Short and G. D.
        Marconnit (Eds.), Contemporary thought on public school
        curriculum. Dubuque, Iowa: W. C. Brown, 1968.

Gage, N. L. "Toward a cognitive theory of teaching." Teachers College
        Record, 1964, 65, 408-412.

Goodlad, John I. The changing school curriculum. New York: The Fund
        for the Advancement of Education, 1966.

Hutchins, Robert M. The conflict in education in a democratic society.
        New York: Harper and Brothers, 1953.

Hutchins, Robert M. The learning society. New York: Frederic A.
        Praeger, 1968.

King, Arthur R., and Brownell, John A. The curriculum and the disciplines
        of knowledge. New York: John Wiley and Sons, Inc., 1966.

Koerner, James (Ed.) The case for basic education: a program of aims for
        public schools. Boston: Little, Brown and Co., 1959.

Phenix, Philip H. "The use of the disciplines as curriculum content."
        The Educational Forum, 1962, 26, 273-280.

Ripple, Richard E., and Rockcastle, Verne N. (Eds.) Piaget rediscovered:
        a report of the conference on cognitive studies and curriculum
        development. Ithaca, N. Y.: School of Education, Cornell Uni-
        versity (Cooperative Research Project No. F-040, U. S. Office
        of Education), 1964.

Schwab, Joseph J. "The concept of the structure of a discipline." The
        Educational Record, 1962, 43, 197-205.

Schwab, Joseph J. "Structure of the disciplines: meanings and signifi-
        cances." In Ford and Pugno (Eds.), The structure of knowledge
        and the curriculum. Chicago: Rand McNally and Co., 1964.

Smith, B. Othanel. "A conceptual analysis of instructional behavior."
    Journal of Teacher Education, 1963, 14, 294-298.

Smith, B. Othanel. "Toward a theory of teaching." In A. Bellack (Ed.),
    Theory and research in teaching. New York: Teachers College,
    Columbia University, 1963.

Smith, B. Othanel, et al. A study of the logic of teaching. Urbana,
    Ill.: Bureau of Educational Research, College of Education,
    University of Illinois, 1960.

Smith, B. Othanel, et al. A study of the strategies of teaching. Urbana,
    Ill.: Bureau of Educational Research, College of Education,
    University of Illinois, 1967.

Smith, Mortimer (Ed.) A decade of comment on education, 1956-1966. New
    York: Council for Basic Education, 1966.

Wann, Kenneth D., et al. Fostering intellectual development in young
    children. New York: Bureau of Publications, Teachers College,
    Columbia University, 1962.

LIST OF REFERENCES FOR POSITION THREE: TEACHING AS TECHNOLOGY

Anderson, Richard. "Educational Psychology." In P. Farnsworth (Ed.), Annual review of psychology. Vol. 18. Palo Alto: Annual Reviews, Inc., 1967.

Bugelski, B. R. The psychology of learning applied to teaching. In Indianapolis: The Bobbs-Merrill Co., Inc., 1964.

Corey, Stephen M. "The nature of instruction." In P. Lange (Ed.), Programed instruction. Sixty-sixth Yearbook, Part II, National Society for the Study of Education. Chicago: Distributed by the University of Chicago Press, 1967.

De Cecco, John D. The psychology of learning and instruction: educational psychology. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1968.

Educational Technology. Vol. 8. 1968 (Pagination not cumulative).

Ericksen, Stanford C. "The zigzag curve of learning." In L Siegel (Ed.), Instruction: some contemporary viewpoints. San Francisco: Chandler Publishing Co., 1967.

Gagne, Robert M. The conditions of learning. New York: Holt, Rinehart and Winston, Inc., 1965.

Gagne, Robert M. "Instruction and the conditions of learning." In L. Siegel (Ed.), Instruction: some contemporary viewpoints. San Francisco: Chandler Publishing Co., 1967.

Glaser, Robert (Ed.) Teaching machines and programed learning, II: data and directions. Washington: Department of Audiovisual Instruction, National Education Association, 1965a.

Glaser, Robert. "Toward a behavioral science base for instructional design." In R. Glaser (Ed.), Teaching machines and programed instruction, II: data and directions. Washington: Department of Audiovisual Instruction, National Education Association, 1965b.

Glaser, Robert. "The design of instruction." In J. Goodlad (Ed.), The changing American school. Sixty-fifty Yearbook, Part II, National Society for the Study of Education. Chicago: Distributed by the University of Chicago Press, 1966.

Heinich, Robert. "Application of systems concepts to instruction." American Annals of the Deaf, 1966, 3, 603-616.

Heinich, Robert. "What is instructional technology?" _Audio Visual Instruction_, 1968, 13, 220-222.

Lumsdaine, A. A. "Instruments and media of instruction." In N. Gage (Ed.), _Handbook of research on teaching_. Chicago: Rand McNally and Co., 1963.

Lumsdaine, A. A., and Glaser, Robert. "Concluding remarks: a technology of instruction." In A. Lumsdaine and R. Glaser (Eds.), _Teaching machines and programed learning: a source book_. Washington: Department of Audiovisual Instruction, National Education Association, 1960.

Mager, Robert F. _Preparing instructional objectives_. San Francisco: Fearon Publishers, 1962.

Mager, Robert F. "Deriving objectives for the high school curriculum." _National Society for Programed Instruction Journal_, 1967, 7, 31-41.

Merrill, M. D. "Components of a cybernetic instructional system." _Educational Technology_, 1968, 8, 5-10.

Mitzel, Harold E. "The impending instruction revolution." _Phi Delta Kappan_, 1970, 51, 434-439.

Rothkopf, Ernst Z. "Two scientific approaches to the management of instruction." In R. Gagne and W. Gephart (Eds.), _Learning research and school subjects_. Itasca, Ill.: F. E. Peacock Publishers, Inc., 1968.

Ryans, David G. "A model of instruction based on infirmation system concepts." In J. Macdonald and R. Leeper (Eds.), _Theories of instruction_. Washington: Association for Supervision and Curriculum and Development, 1965.

Scandura, Joseph M. "Teaching--technology or theory?" _American Educational Research Association Journal_, 1966, 3, 139-146.

Smith, K. U., and Smith, Margaret Foltz. _Cybernetic principles of learning and educational design_. New York: Holt, Rinehart and

Travers, Robert M. W. "Toward taking the fun out of building a theory of instruction." _Teachers College Record_, 1966, 68, 49-60.

Travers, Robert M. W. "Directions for the development of an educational technology." In P. Witt (Ed.), _Technology and the curriculum_. New York: Teachers College Press, Columbia University, 1968.

Twyford, Loren C., Jr. "Educational communications media." In R. Ebel (Ed.), _Encyclopedia of Educational Research_. (4th ed.) New York: The Macmillan Co., 1969.

Ullmer, Eldon J. "The meaning of instructional technology: an operational analysis." Educational Technology, 1968, 8, 10-14.

Witt, Paul W. F. "Educational technology: the education of teachers and the development of instructional materials specialists." In P. Witt (Ed.), Technology and the curriculum. New York: Teachers College Press, Columbia University, 1968.

Woodruff, Asahel D. [Untitled.] Paper presented at the Tenth Annual Phi Delta Kappa Research Symposium, Salt Lake City, 1969.

Yee, Albert H., Shores, Jay, and Skuldt, Karen. "Systematic flowcharting of educational objectives and processes." Audio Visual Communication Review, 1970, 18, 72-83.

LIST OF REFERENCES FOR POSITION FOUR: THE MANAGEMENT OF CONTINGENCIES

Bandura, Albert. "Psychotherapy as a learning process." Psychological
    Bulletin, 1961, 58, 143-159.

Corey, Stephen M. "The nature of instruction." In P. Lange (Ed.), Pro-
    gramed instruction. Sixty-sixth Yearbook, Part II, National
    Society for the Study of Education. Chicago: Distributed by
    the University of Chicago Press, 1967.

Evans, Richard I. B. F. Skinner: the man and his ideas. New York: E.
    P. Dutton and Co., 1968.

Ferster, C. B., and Perrott, Mary Carol. Behavior principles. New York:
    Appleton-Century-Crofts, 1968.

Gray, Burl B., Baker, Richard D., and Stancyk, Susan E. "Performance
    determined instruction for training in remedial reading." Jour-
    nal of Applied Behavior Analysis, 1969, 2, 255-263.

Homme, Lloyd, C'de Baca, Polo, Cottingham, Lon, and Homme, Angela. "What
    behavioral engineering is." The Psychological Record, 1968, 18,
    425-434.

Isaacs, Wayne, et al. "Application of operant conditioning to reinstate
    verbal behavior in psychotics." Journal of Speech and Hearing
    Disorders, 1960, 25, 8-12.

Keller, F. S. "A personal course in psychology." In R. Ulrich, L.
    Stachnik and J. Mabry (Eds.), Control of human behavior. Glen-
    view, Ill.: Scott, Foresman, Inc., 1966.

Kimble, Gregory A. (Ed.) Foundations of conditioning and learning. New
    York: Appleton-Century-Crofts, 1967.

Mowrer, O. H. Learning theory and the symbolic processes. New York:
    John Wiley and Sons, Inc., 1960.

Reynolds, G. S. A primer of operant conditioning. Glenview, Ill.: Scott,
    Foresman and Co., 1968.

Rogers, Carl R., and Skinner, B. F. "Some issues concerning the control
    of human behavior--a symposium." Science, 1956, 124, 1057-1065.

Ross, Alan O. "The application of behavior principles in therapeutic
    education." Journal of Special Education, 1967, 1, 275-286.

Simon, Herbert A. The sciences of the artificial. Cambridge, Mass.: The
    M.I.T. Press, 1969.

Skinner, B. F. Walden two. New York: The Macmillian Co., 1948.

Skinner, B. F. Science and human behavior. New York: The Macmillian Co., 1953.

Skinner, B. F. The technology of teaching. New York: Appleton-Century-Crofts, 1968.

Staats, Arthur W. Learning, language, and cognition. New York: Holt, Rinehart and Winston, 1968.

Tighe, Thomas J., and Elliott, Rogers. "A technique for controlling behavior in natural life settings." Journal of Applied Behavior Analysis, 1968, 2, 263-266.

Travers, Robert M. W. "Directions for the development of an educational technology." In P. Witt (Ed.), Technology and the curriculum. New York: Teachers College Press, Columbia University, 1968.

Woody, R. H. "Behavior therapy and school psychology." Journal of School Psychology, 1966, 4, 1-14.

Some Caveats

The titles given to the four positions or categories identified (see Figure 1.2) are not entirely felicitous--as with the abstracting process in general, naming a phenomenon reduces its quiddity. The labels are descriptive of the content of the positions (see Figure 1.2). They are terms drawn from the vocabulary of those espousing the principles of the various categories. These terms are not necessarily indicative of the most profound pedagogical aims which might be conceived by those who take the position. For example, a representative of the "contingency management" classification may be interested in enhancing the self-image of students as would a representative of the "self-enhancement" position; nevertheless, the former presumably would proceed, that is "instruct," in a radically different manner than the latter to achieve that end. The labels are intended to suggest emphases common to the range of answers associated with the three dimensional questions. They are not intended to create mutually exclusive category boundaries. The over-lap of the categories is representative of the phenomenal reality--as with any category system, positions merge into other positions and hard and fast classificatory rules cannot be adhered to with fidelity to reality.

The conception of teaching prescriptions depicted in Figure 1.2 does not represent all varieties of systematic thinking available to the researcher.

Further, it is not intended to suggest that all nuances of meaning and defini-
tion found in the writings assigned to each category are captured, either
visually or verbally. Three factors were considered beofre making the deci-
sion to telescope the information from the three dimensions into one continuum,
the viewpoints or positions on which are considered to have a taxonomic rela-
tionship each to the other: (1) the increased clarity of the conception; (2)
the fact that within the various frameworks identified, different authors empha-
size different dimension. For example, one writer, within the area designated
as "technology," may emphasize the nature of the learner (dimension one), another,
within the same area, may emphasize the instructional process (dimension two),
and so on. They will both, however, prescribe in a manner consonant with the
abstracted characteristics of the "technology" category. This differential
"weighting" of dimensions within a category allows for some flexibility of
assignment of many of the writers. To illustrate: the "technology" category
may be found to prescribe for the process of teaching (dimension two) in a
fairly consistent manner; a writer may then be said to represent the "tech-
nology" viewpoint when he recommends that teaching proceed in such manner,
although he may say nothing directly about the nature of the learner (dimension
one); (3) the logic of the thing--e.g., if one conceives of the learner as an
externally-determined being, one who is not free in any existential sense, one
would not, logically, advocate outcomes of teaching using the same language as
those who view teaching as the facilitation of growth of a "free" being.(see
Rogers and Skinner, 1956, and Bandura, 1961).

Validation of the Model

The validation (if that is even a useful term in the present context)
of a classification system of the type presented herein is essentially a matter

of appealing to the literature. The result of such an appeal is a more or less

extended resumè of prescriptions for teaching according as they are discovered

throough asking the three dimension questions (see above, pp. 6-7) of the litera-

ture. This paper includes only a drastically abbreviated summary of the avail-

able material. For a more comprehensive treatment see the author's A Conceptual

Model for Ordering Prescriptive Thought About Teaching (1970). Although only

an outline-type of presentation of the positions is provided herein, an exten-

sive set of references is included for each of the categories.

The writer knows of no way to clear himself objectively of all possible

charges of slanted or biased reading of the relevant literature. In fact he

entertains the notion that such assurance is not possible. In a sense any

conceptual ordering of a oomplex phenomenon constitutes a subjectively biased

rendering of the reality conceptualized. Therefore, to speak of anything like

an "objective validation" of the proposed conceptual device seems to make little

sense.

Summary and Implications

The conceptual model (including Figure 1.2) is intended to provide

a representation--simplified from the complexity of the real-world phenomena--

of the way educators (and, in large part, of the way educational psycholo-

gists) look at the enterprise called teaching. Thus the inquiry is both theo-

ptical and descriptive. The study is theoretical because the formulation of

conceptual categories from a series of concrete instances (whether of physical

or verbal phenomena) is the process of abstraction--the defining characteristic

of a theoretical undetaking. The study is descriptive because the model des-

cribes or presents phenomena without evaluation. The phenomena in this case

are the prescriptions for teaching enunciated by a number of educators.

The identification of a continuum with four specified positions obviously should not be considered as any form of ultimate step. It is an initial, tentative probe, a halting step toward greater inclusiveness and less ambiguity in our thinking about teaching.

Identified briefly below are nine possible directions that future theoretical inquiry could take, based on the conceptual model presented in this paper.

1. A theoretical study could be conducted into the relative value of the four categories of the model. The present study was descriptive, conceived as a necessary prior step to an evaluative study. The investigator could make explicit the value orientations held by each category and draw conclusions based on them.

2. An attack on the dimensional problem (Gage, 1969) could be directly relevant to the concerns of instructional theorizing. One of the basic difficulties in this connection is a lack of understanding of even how to frame the questions, the answers to which would reveal the nature and scope of the problem. Subsequent to those fundamental queries would be ones such as the following: Can dimensions be differentially weighted in terms of significance, or some other criterion? Are dimensions capable of being established at both a micro- and a macro-level? If they are, what advantages and disadvantages accrue from the use of one or the other?

3. Related to the study suggested above is the question, What strategies are available to a researcher in the attempt to relate conceptual categories prescribing teaching practices to each other? This question is prior to the question, What are the relations that prevail? In other words, one needs to identify what criteria apply when one attempts to establish relations

among conceptual categories. To the writer's knowledge, the nature of such criteria has not been investigated systematically as they relate to teaching.

4. Using Macdonald's (1967) criteria of "dominant themes," an investigation could be conducted into the relative dominance (or relevance) of the three themes, the pupil, the discipline, the society, in regard to the conceptual positions identified in this study. That there would exist sizeable differences among the three concerns relative to the categories appears certain.

5. The notion of "reliability" applies in a special way to a theoretical study such as the present one. The conceptual categories would be considered "reliable" if a number of other investigators, using the same dimensional questions as those used herein, were to examine the prescriptive literature on teaching and abstract the same (or essentially similar) constructs. Thus, a number of "replications" of the inquiry would yield informative data about the generalization potential of the categories, as well as about the influence of researcher predilection on the abstracting process.

6. On the basis of the present inquiry, the writer opines that dimension one, the nature of the learner, is crucial to the enterprise of instructional theorizing; perhaps it is the controlling concept for all prescriptive comment. An investigation into the assumptions about the dimension held by various theorists and the relations which hold between those assumptions and the prescriptions formulated by the theorists would be an inquiry of value.

7. Green (1968) has postulated a "teaching continuum," which, in part, moves from "conditioning" and "training" at one end, to "instructing" and "indoctrinating" toward the other. In what way do the categories of the model presented in this paper relate to Green's continuum? The answer to that question would illuminate both constructs.

8. Relationships prevail between the categories identified herein, on the one hand, and descriptions of teaching acquired through the use of analytic observation systems, on the other. An examination of correspondences and differences between the two could be a profitable inquiry. One way to approach this question would be first, to conceptualize criteria for distinguishing various facets, then to apply one or more standard analytic instrucments to on-going classroom teaching and finally, to apply the criteria to the results. A second approach would be to construct classroom observation instruments which reflect the categories as abstracted and observe classroom teaching through them.

9. The matrix of this study is largely the psychological studies. A similar investigation, i.e., the identification of frameworks for viewing teaching, could be undertaken using philosophic concepts and models as the source of the prescriptive comment. For example, the semantic problems inherent in the development of a conceptual model from extant literature lend themselves to a treatment via analytical philosophy (see, for example, Macmillan and Nelson, 1968).

FIGURE 1.1

THREE DIMENSIONS ALONG WHICH PRESCRIPTIONS
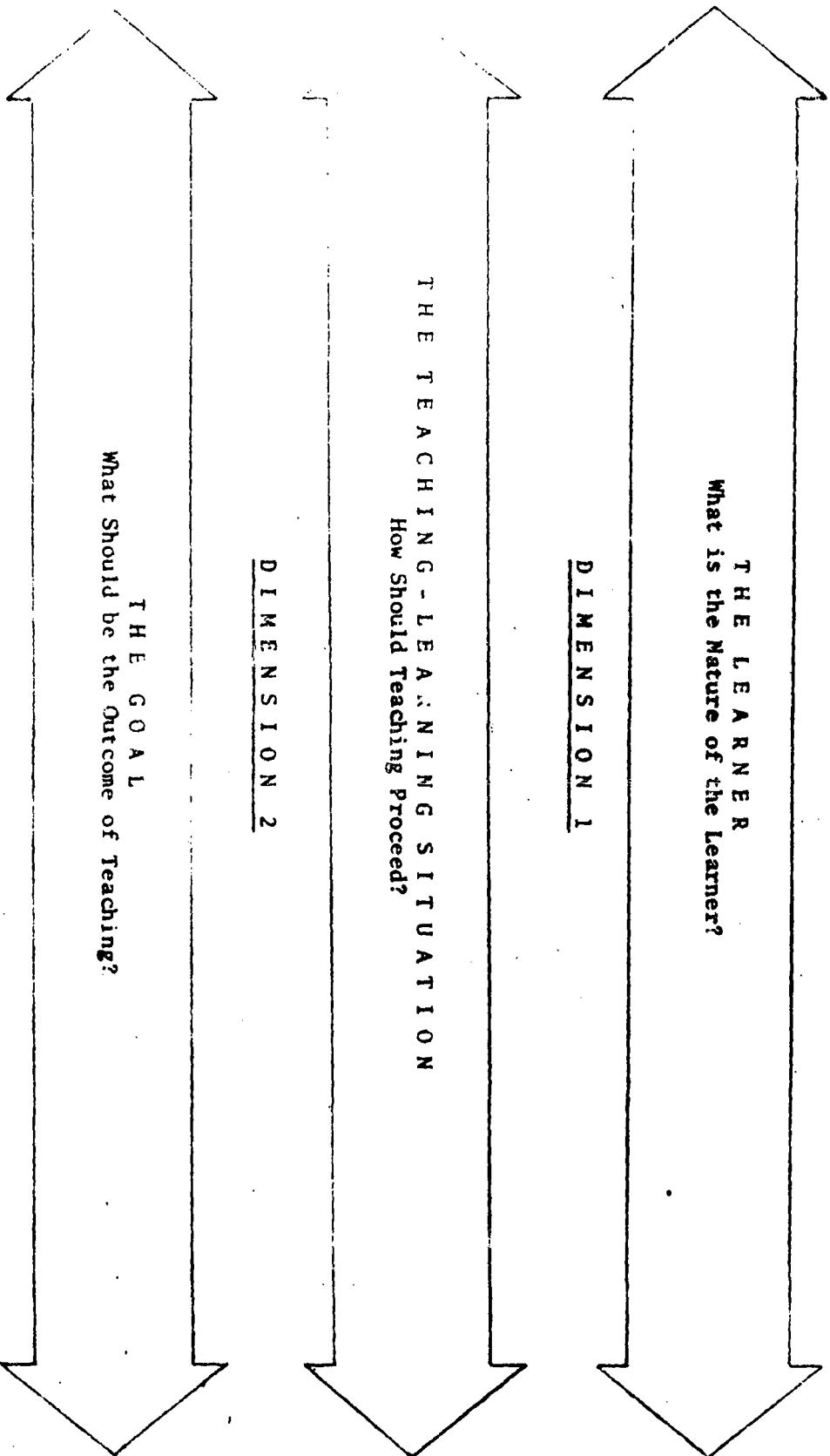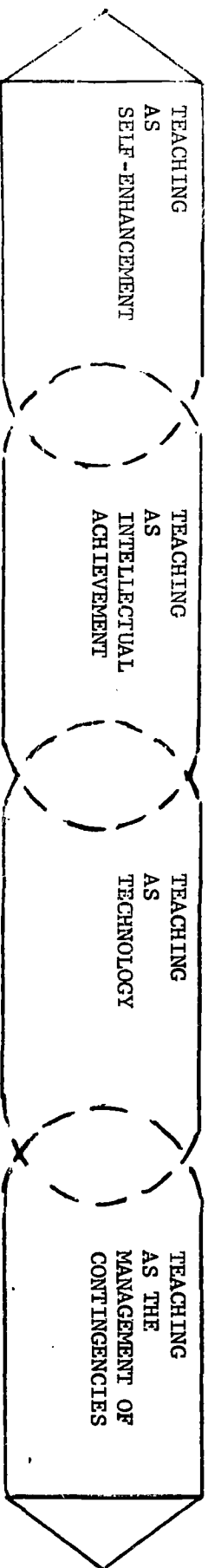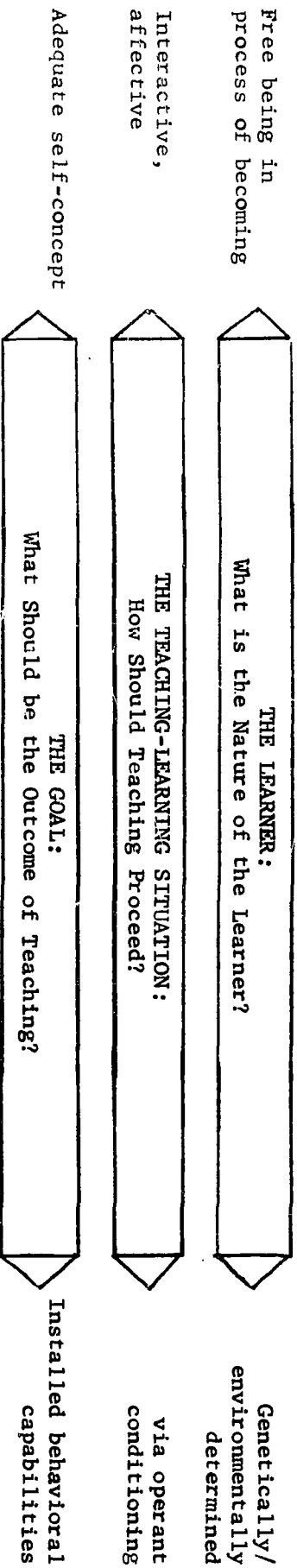FOR TEACHING CAN BE ORDERED

DIMENSION 1

THE LEARNER
What is the Nature of the Learner?

DIMENSION 2

THE TEACHING-LEARNING SITUATION
How Should Teaching Proceed?

DIMENSION 3

THE GOAL
What Should be the Outcome of Teaching?

34

Figure 1.2

A CONCEPTUAL ORDERING OF PRESCRIPTIONS
FOR TEACHING

THE LEARNER:
What is the Nature of the Learner?

THE TEACHING-LEARNING SITUATION:
How Should Teaching Proceed?

THE GOAL:
What Should be the Outcome of Teaching?

Free being in
process of becoming

Interactive,
affective

Adequate self-concept

Genetically/
environmentally
determined

via operant
conditioning

Installed behavioral
capabilities

TEACHING
AS
SELF-ENHANCEMENT

TEACHING
AS
INTELLECTUAL
ACHIEVEMENT

TEACHING
AS
TECHNOLOGY

TEACHING
AS THE
MANAGEMENT OF
CONTINGENCIES

35

REFERENCES

Bandura, Albert. "Psychotherapy as a learning process." Psychological Bulletin, 1961, 58, 143-159.

Boring, E. G. "The model." Contemporary Psychology, 1959, 4, 385.

De Cecco, John. The psychology of learning and instruction: educational psychology. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1968.

Gage, N. L. (Ed.) Handbook of research on teaching. Chicago: Rand McNally and Co., 1963.

Gage, N. L. "Theories of teaching." In E. Hilgard (Ed.), Theories of learning and instruction. Sixty-third Yearbook, Part I., National Society for the Study of Education. Chicago: Distributed by the University of Chicago Press, 1964.

Gage, N. L. "Teaching methods." In R. Ebel (Ed.), Encyclopedia of Educational Research. (4th ed.) New York: The Macmillan Company, 1969.

Gordon, Ira J. (Ed.) Criteria for theories of instruction. Washington: Association for Supervision and Curriculum Development, 1968.

Green, Thomas F. "A topology of the teaching concept." In C. Macmillan and T. Nelson (Eds.); Concepts of teaching: philosophical essays. Chicago: Rand McNally and Co., 1968.

Harris, Ben M. "What is good teaching? An analysis of various models of teacher effectiveness." Paper presented at the meeting of the National Academy for School Executives, Dallas, Texas, 1969.

Henderson, Kenneth B. "A theoretical model for teaching." School Review, 1965, 73, 384-391.

Hermanowicz, Henry J. "The need for macroanalytical approaches to teacher education." Journal of Teacher Education, 1969, 20, 299-302.

Hyman, Ronald T. (Ed.) Teaching: vantage points for study. Philadelphia: J. B. Lippincott Company, 1968.

Loree, M. Ray. Psychology of education. New York: Ronald Press, 1965.

Macdonald, James B. "Myths about instruction." Educational Leadership,
        1965, 22, 571-576+.

Macdonald, James B. "Structures in curriculum." In W. Kahl (Ed.),
        Report of the conference on curriculum leadership. Madison,
        Wis.: Wisconsin State Department of Public Instruction, 1967.

Macmillan, C. J. B., and Nelson, Thomas W. Concepts of teaching: philo-
        sophical essay. Chicago: Rand McNally and Co., 1968.

Ogden, C. K., and Richards, I. A. The meaning of meaning. (10th ed.)
        London: Routledge and Kegan Paul Ltd., 1966.

Rogers, Carl R., and Skinner, B. F. "Some issues concerning the control
        of human behavior--a symposium." Science, 1956, 124, 1057-1065.

Smith, B. Othanel. "A conceptual analysis of instructional behavior."
        Journal of Teacher Education, 1963, 14, 294-298.

Thelen, Herbert A. "Suppositions: four models for education." In H. A.
        Thelen, Education and the Human Quest. New York: Harper and
        Row, Publishers, 1966.

Webb, Clark D. A Conceptual Model for Ordering Prescriptive Thought
        About Teaching. Unpublished doctoral dissertation, University of
        Texas, 1970.

Woodruff, Asahel D. Basic concepts of teaching. San Francisco: Chandler
        Publishing Co., 1961.