Research Series No. 19

FIELDWORK AS BASIS FOR THEORY BUILDING IN RESEARCH ON TEACHING

Robert J. Yinger

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Abstract

Two major arguments are proposed: (1) Research on teaching needs a healthy dose of theory building to provide for a more clear conceptualization of the nature of the process educators intend to improve through research and (2) Grounded theory as a method of generating theory from fieldwork as an effective means to begin this undertaking. Modes of theory and theorizing are discussed, as well as several reasons for the dearth of theorizing in research on teaching. Grounded theory is described; examples of its use in two studies are provided.

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Fieldwork as Basis for Theory Building in Research on Teaching[1]

Robert J. Yinger[2]

This paper is an examination of the current status of theory building in research on teaching and a discussion of grounded theory as a method of generating theory from fieldwork. Specifically, I shall present two major arguments. First, research on teaching needs a healthy dose of theory building to aid researchers in more clearly conceptualizing the nature of the educational enterprise they seek to improve. Second, generating theory through fieldwork is an effective means for increasing theory building in research on teaching. Before these arguments can be developed, however, it is necessary to discuss what is meant by theory and theory building.

Forms of Theory

A goal of all scientific disciplines is to link together lower-order generalizatons or propositions into larger, systematic networks of propositions that will enable the explanation and prediction of phenomena within a given domain. Such networks of propositions are generally referred to as theories. Although definitions of theory abound, theory, in its simplest form, consists of: (1) a set of units, facts, propositions, and variables, and (2) a system of relationships among the units (Snow, 1973).

Many different forms or types of theory have been proposed from a number of different perspectives. Theory has been examined from the point

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[1]Paper presented at the annual meeting of the American Educational Research Association, Toronto, Ontario, March 1978.

[2]Robert J. Yinger is an associate professor of educational leadership at the University of Cincinnati and a former research associate at the Institute for Research on Teaching.

of view of philosophy (Nagel, 1969; Turner, 1967), sociology (Merton, 1957, 1967; Zetterberg, 1965), psychology (Boring, 1963; Marx, 1963; Snow, 1973), and social science in general (Kaplan, 1964). A common characteristic of nearly all of these viewpoints is that theory exists in many forms, varying primarily in the degree to which it is formalized and systematized. Illustrating this continuum are two classification schemes that have recently been applied to the examination of educational theory.

Four "Senses" of Theory

The first classification scheme is that of the four senses of theory identified by Nagel (1969). These senses of theory were recently used by Kliebard (1977) to examine the current status of curriculum theory. Nagel first refers to theory in the sense of a system of universal statements. Such a system is generally removed from actual phenomena but is amenable to explaining established regularities in the real world and to predicting with varying degrees of precision individual occurrences. Examples of this sense of theory include Newtonian mechanics in relation to gravity, current quantum mechanics, evolutionary theory, and the marginal theory of utility in economics. Nagel acknowledges that theories of this nature are relatively rare and have only recently been achieved in the more advanced natural sciences.

The second sense of theory is somewhat more restrictive than the first and refers to an individual law or generalization. Theory in this sense is largely comprised of single statements asserting some relation of dependence between variables. Examples are Boyle's Law in physics, Grimm's Law in linguistics, and the Law of Effect in psychology. Though these theories cover a smaller domain than theory in the first sense, they are basically

of the same order and their credibility and acceptance depend to a large degree on empirical verification.

The third sense of theory identified by Nagel is less systematic in that it refers to neither a set of systematically organized statements nor a single explicitly formulated generalization. Theory in this sense is an attempt to identify and designate the factors or variables constituting the "major determinates" of the phenomena being investigated. In other words, major factors and variables are specified without explicit statements as to what the relationship is between them. Examples offered for this form of theory are the Keynesian theory of economics and Parson's general theory of social action.

The fourth and final sense of theory distinguished by Nagel (1969) refers to "any more or less systematic analysis of a set of related concepts" (p. 10). The main task of this form of theory is to elaborate and clarify vague concepts with a goal towards explicating the major components of the problem or question under consideration. In many cases, empirical considerations play only a secondary role in this sense of theory. Nagel provides as an example here the philosophical theories of knowledge, and Kliebard suggests that current curriculum theory belongs in this category.

"Grades" of Theory

A second scheme for classifying theory is proposed by Snow (1973) in the Second Handbook for Research on Teaching. Snow suggests six grades of theory, based partly on Boring's (1963) 14 types of theoretical statements. Like Nagel's forms of theory, Snow's six grades progress from the formal and systematic forms to those that are less specific and rigorous. Each of these forms of theory will be briefly characterized below.

Axiomatic Theory is referred to as the highest form of theory and is characterized by (1) a set of primitive, undefined concepts from which all other concepts can be derived, and (2) a set of basic axioms or postulates from which empirically testable theorems can be derived. Snow states that although Axiomatic Theory is rare in contemporary psychology and virtually unknown in education, this level of theoretical work is a goal to which research should aspire.

Broken Axiomatic Theory refers to theory in which the formal system has broken down (e.g., formal theories "on the way out" or theories being broken by continuing research) or to theory not yet completely formalized. This form of theory often results from digestion and reformulation of previous theories or from an eclectic pulling together of previous work. Snow suggests that Broken Axiomatic Theory may be the highest form of theory to be found in research on teaching for some time to come.

Conceptual theories and constructs comprise a form of theory that results from the gradual elaboraton and refinement of theoretical constructs through research. The result of this process is a conceptual network of constructs as found in Festinger's (1957) theory of cognitive dissonance or Atkinson and Feather's (1966) theory of achievement motivation.

Descriptive theories and taxonomies are a grade of theory characterized by systematic descriptions of phenomena like conceptual theories, but this grade does not attempt to introduce new theoretical constructs for explanatory purposes. Examples of this form are the taxonomic work of Bloom (1956), Guilford's (1967) Structure of Intellect, and Gagné's (1970) types of learning.

Elementism is a grade of theory that features attempts to reduce vari-

ables and relations to the most elementary units possible. This form of analysis is portrayed by Snow as a prerequisite to descriptive theory and taxonomies. In research on teaching, this approach has been proposed by Gage (1963) and attempted by McDonald and Allen (1967).

Formative Hypotheses -- the formulation of hypotheses -- is identified by Snow as the lowest grade of theory. This refers to the basic ideas and speculations that are the building blocks for future research. The specification of testable hypotheses is the main thrust of this effort, but Snow argues (á la Boring) that untestable hypotheses also have a place in this form of theory.

The conceptual schemes of Nagel and Snow both illustrate the myriad forms in which theory may be generated. Theory is not necessarily relegated to the more formal states of axiomatic and universal statements. Having briefly examined what theory is and the many forms it can take, I will address the question of how one develops theory.

Theory Building

As might be expected there is not one generally accepted method for developing theory. The topic of theory building has generated as much disagreement and diversity of opinion as have the definitions of theory and the specification of forms it can take. One reason for this state of affairs is that the methods for generating and constructing theory are closely related to the general components and methods for doing science. For instance, Marx (1963) proposes that the three basic elements of theory construction are observation, constructs, and hypotheses. For Marx, the process of scientific theory construction involves the progression of observations from everyday to experimental, the development of constructs

from those with surplus meaning to those with explicit empirical referents (operational definitions), and the statement of hypotheses from intuitive forms to more vigorous forms. This striving towards control, operational specificity, and testability is portrayed as the goal of science. The progression of these basic elements says little, however, about how theory building is actually carried out. Information is needed, for instance, about how constructs are identified and elaborated, how hypotheses are generated and tested, and how observations (data) relate to conceptualization (theory).

Marx (1963) distinguishes among three modes of theory construction which differ primarily in the type of interaction between the conceptual (theory-language) and the empirical (data-language) levels of analysis. The first mode, deductive theorizing, is characterized by an emphasis on a well-defined conceptual structure that suggests hypotheses to be tested by empirical research. Work at the conceptual level of analysis clearly overwhelms work at the empirical level in this mode of theory building, and theory is formally constructed based often on minimal empirical grounds. Snow's Axiomatic Theory and Nagel's first sense of theory (universal statements) are often the result of this type of theory building.

The second mode of theorizing identified by Marx is inductive theorizing. Here the direction of interaction is almost solely from the empirical to the conceptual level of analysis, with the primary emphasis on the acquisition of facts. Theory in this mode consists essentially of summarizing empirical relationships with a minimum of inferential or logical deliberation. The product of inductive theory is a set of general inductive principles. This mode of theory building seems most amenable to Snow's three lowest grades of theory (Descriptive Theories and Taxonomies, Elementism, and

Formative Hypotheses) and to Nagel's third and fourth senses of theory (respectively, attempts to identify the major determinates of the phenomena under investigation, and analysis of a set of related concepts).

Functional theorizing is Marx's third major mode of theory construction. In this mode the interaction between data gathering and conceptualization is two-way, as both types of activity are equally emphasized. Theory building in this mode is closely tied to empirical research, and theoretical formulations are rarely taken much further than provisional statements developed to account for empirical findings. This method of theorizing is likely to generate conceptual theories and constructs and possibly Broken Axiomatic Theories in Snow's classification scheme.

Theory Building in Research on Teaching

"If the object of /educational/ research is the development of coherent and workable theories, researchers are nearly as far from that goal today as they are from controlling the weather." This assessment of educational theory was made by Shulman in 1970 (p. 371). The fact that we have progressed little from this situation in the last seven years is reflected in recent statements by Mitzel (1977). Mitzel suggests that the practice of education, insofar as it is based on educational research, has moved forward as far as it can go without an infusion of new concepts, new assumptions, and new theory. He argues that the seemingly unproductive findings of schooling research in the last several decades are due to an inadequate conception of the causative factors in schooling.

> In education researchers are not providng us with new tested knowledge for increasing pupil learning. A deep running viable theory would help to accomplish this goal if we could establish one that was consistent with the observable phenomena. (p. 16)

A survey of the current status of theory building in research on teaching reveals little conceptual activity. Any theorizing that is taking place is relegated to the less formal and less systematic end of the theoretical continuum. In my view, this paucity of theoretical effort in current research on teaching can be largely accounted for by two conditions.

The first condition I would call a "fear of the unknown." To most researchers, theory construction is an imposing and threatening task. This is partly due to common conceptions about theory and partly due to a lack of training in thinking about and actually doing theory. Theory to many researchers and certainly to most graduate students refers to conceptualization in its most formal and grand states. As students, the only forms of theory that we came in contact with were comprehensive theoretical formulations such as Hull's and Skinner's theories of learning, Piaget's theory of development, and Freud's and Lewin's theories of personality.

Contact with these formal systems also relays an impression about the process of theory building itself that theorizing is something that is only done by a gifted few, and then only after years of research and deliberation. This impression is reinforced by the lack of discussion and training in theorizing provided by most graduate education programs. As educational psychologists we are to be sure that our empirical tool kit in one hand is well stocked, though we end up standing rather lopsidedly because our theoretical tool kit in the other hand is empty. Thus, when we hear rallying calls to theory building as those by Shulman and by Mitzel, we are for the most part unarmed for the task. We are not quite sure what theory is and we do not know how to do it, so we retreat to what we can do

well -- empirical research with some occasional theory testing and verification.

The second condition contributing to the lack of theory building in research on teaching today is the general conception about the role of theory in science. Theory is most commonly perceived as an outgrowth of research rather than as a tool for research -- a product rather than a process. The scientific ladder begins at the bottom with empirical observations, then moves up to hypotheses, to lower-order propositions, and then to theory. Researchers have been trained to spend a lot of time at the bottom of the ladder making sure the ground is firm before venturing to the higher rungs.

This preoccupation with data gathering has been recently reinforced in research on teaching. As the anthropologists, sociologists, and ecological psychologists have gradually convinced us of the complexity of the teaching endeavor, we have realized the necessity for a lot of work in describing and analyzing the classroom and its activities. Any discomfort felt in venturing out of the lab and into the field has been somewhat moderated by a feeling that all researchers need to do for a while is to merely describe what they see.

This emphasis on a "rich" description of teaching in natural settings has thus far proved to be very valuable in thinking and research on teaching. A danger of this approach, which has been pointed out in recent anthropological discussions, is that it is very easy to be "thick" on description while being "thin" on analysis and theorizing. What is needed today in research on teaching is a method of theory construction that can build on this empirical work and at the same time provide theoretical conceptualiza-

tion that may be used as a research tool to guide further investigation. I suggest that "grounded theory," as a method of theory building, is an effective avenue to beginning the task of theory construction in research on teaching.

Grounded Theory

When one confronts the task of theory construction two questions seem most salient: How and where do I start? and What am I striving towards? The first question is basically one of method, and the second question chiefly involves the issues of scope and form.

Building a theory is a difficult and crucial task. Description of this task has traditionally been passed over or couched in such vague statements as "theory. . .begins with a concept and its associated imagery and generates an array of theoretical problems" (Merton, 1967, p. 45). Other advice has focused on conceptual tools such as models and metaphors. Snow's (1973) model for theorizing portrays theorizing as a process involving interaction among metaphors, models, and metatheories. Even though such models offer good conceptual heuristics, the researcher is still confronted with the initial difficulty of good metaphor generation. Snow himself acknowledges the difficulty of the task yet provides only general guidelines for moving from data to metaphor, model, and metatheory.

Grounded theory is a method for discovering theory from data. It allows one to begin the task of theory construction without the flash of insight, the vivid imagery, or the inventive conceptualization needed for other methods. This method has been most thoroughly developed by Glaser and Strauss (1965, 1967) and until recently has been most widely used in sociology.

Glaser and Strauss define theory as a strategy for handling data in research, stating that theory should (1) provide modes of conceptualization for describing and explaining behavior, (2) provide categories and hypotheses clear enough to be verified in present and future research, and (3) be readily understandable by researchers of any viewpoint, by students, and by laypersons and practitioners. To meet these requirements, Glaser and Strauss (1967) recommend that theory must "fit" the situation being researched and "work" when put to use. By this they mean that "the categories must be readily (not forcibly) applicable to and indicated by the data under study /and/... that they must be meaningfully relevant to and be able to explain the behavior under study" (p.3). They suggest that to meet these criteria, the best approach to take in theory generation is a systematic discovery of theory from social research data.

Glaser and Strauss argue that in addition to the traditional criteria used for judging the usefulness of a theory (e.g., logical consistency, clarity, parsimony, density, scope, and integration), researchers should be concerned about how it was generated. They suggest that the quality of a theory is not independent of the method of generation (as some theorists would argue), but that it is likely to be a better theory to the degree that it has been inductively developed from qualitative research.

The research strategy used to generate grounded theory is similar to Marx's "functional" theorizing discussed earlier. Grounded theory, like functional theory, involves both inductive and deductive components. Hypotheses and constructs not only arise from the data but are systematically elaborated and refined in relation to the data as the research progresses. Glaser and Strauss stress that theory generation of this type involves a process of research.

The major method advocated for discovering grounded theory is comparative analysis, a research strategy developed in sociology and social anthropology. This method was pioneered in sociology by theorists such as Weber, Durkheim, and Mannheim and has been most widely used for theory verification and validation. Comparative analysis as a strategy for theory generation is concerned with two major activities: the generation of conceptual categories and their conceptual properties, and the development of hypotheses about the relations among these categories and their properties.

The way the comparative method works to generate theory can be briefly described as follows. As one becomes immersed in a set of empirical data, certain pieces of evidence suggest concepts or conceptual categories. These conceptual categories are theoretical abstractions about what is going on in the area studied, and can be illustrated by actual data in the study. Once these categories are generated, new data from different groups, situations, and sources are examined and compared to further test the value of the categories and their properties. The aim of this effort is to achieve a diversity among emergent categories and a variety of levels of conceptual generalization.

This comparison of similarities and differences among different groups and situations also aids in the generation of generalized relations among the conceptual categories. These are taken on as hypotheses that are examined in light of further comparisons. Joint collection, coding, and analysis of data is the basic operation of this method, and in this manner research becomes a continuous process of theory generation, elaboration, and testing. Theory generation becomes a tool of research by suggesting fruitful areas for further investigation, and the researcher gains confidence in his/her categories and hypotheses since they have emerged from the data and are contin-

ually being refined and reformulated by the data. (For a more detailed discussion of this method ...see Glaser & Strauss, 1967.)

Before moving to two examples of grounded theory in recent educational research, two further aspects of this method should be mentioned. First, since grounded theory is concerned with theoretical conceptualization that "fits" real situations and "works" when put to use, the primary source of data for this type of investigation should be real social encounters. Thus, fieldwork becomes a fundamental basis for theory development. For conceptual categories and hypotheses which have meaning for real situations, they must be based on qualitative descriptions of behavior in natural situations. This does not rule out qualitative data from other sources such as questionnaires, interviews, written documents, and other research reports and writings. In applying this method of theory building to research on teaching, the central concern should be that the theorizing is grounded in situations that are representative of real teaching and learning settings. Better yet, theorizing should be grounded in actual teaching/learning situations.

Second, the scope of theorizing that should be attempted with grounded theory must be considered. The fact that grounded theory is closely tied to field data means that the kinds of theories initially emerging from these efforts will be somewhat specific and limited in scope. Grounded theory in research on teaching will not immediately produce theories of teaching or even theories of decision making or social interactions Theory will be more akin to Merton's (1967) "special theories" that are applicable to limited conceptual ranges, or to the "local theories" proposed by Snow (1977). Initially, grounded theory is most likely to produce theories about such things as teacher judgment processes involved in selecting materials, the development of disciplinary strategies by beginning teachers, or effective teaching

methods for math instruction in first-grade self-contained classrooms. More general theories of teaching and learning will emerge (if they are possible) only through the summarization and integration of many smaller grounded theories.

Examples of Grounded Theory in Research on Teaching

Described below are two studies that illustrate the scope of theorizing resulting from grounded theory and provide examples of how this strategy can be used in research on teaching.

A Study of Interactional Competence

A study recently completed by Florio (1978) investigated one important aspect of "learning to go to school"; that is, how newcomers to a school situation acquire the interactional competence necessary to behave and interact effectively. (Interactional competence refers to the appropriate use and interpretation of talk and nonverbal behavior in face-to-face communication.) The study of interactional competence has developed out of sociolinguistics and communication and is primarily interested in how people learn to communicate appropriately in social contexts. Just as it is necessary for a person to be linguistically competent to use language appropriately, it is necessary for a person to be interactionally competent to act appropriately in social situations.

Sociolinguistic research has shown that membership in a group coming together regularly for purposes of communication is necessary for the acquisition of interactional competence. This is because much of what competent communicators must know operates unconsciously and is therefore not taught explicitly. Rather, it is acquired by interaction in social life. Research has also indicated the important influence of the shared social context in which people communicate. It has been suggested that appropriate communica-

tive froms are matched to situational contexts so that being interactively competent involves knowing what context one is in and what behaviors are appropriate to that context.

Florio was primarily interested in how newcomers learn to become competent in the complex situation of school. She focused on a combined kindergarten/first-grade classroom to study this phenomenon; at this level, breaches of appropriate interaction requiring the teachers to explicate interactional knowledge are common and there is the opportunity to observe competent classroom communicators (first graders) and "newcomers" (kindergarteners) in the same contexts.

The method chosen for this study was ethnographic descriptions obtained as a participant observer. These descriptions were combined with micro-analysis of videotaped accounts of classroom life. Also analyzed were viewing sessions where the teacher watched the videotapes and commented both freely and in response to particular questions or directives from the researcher. In effect, this strategy provided a continuing alternation between the view available to an insider in the classroom and the perspective of one outside the classroom. Through this approach Florio was able to triangulate on key instances of behavior. The study was based on data collected over a two-year period in the same classroom.

Florio found that the school day in this classroom was comprised of a series of interactional contexts. She identified two different kinds of activities that dominated classroom interaction. The first was whole-class, single-focus activity directed by the teacher, and the second type was more loosely organized, multi-focus activity in which the students initiated activity outside of the direct supervision of the teacher.

Florio took one classroom event, a multi-focus activity called "worktime," and analyzed the important interactional contexts of which it was comprised. She found four major contexts for interaction in worktime: "getting ready," "focused time," "wind up," and "clean up." Each context was shown to have unique behavior demands, and analysis described how changes between contexts were signaled by the teacher.

The generation of theory in Florio's study evolved through continued interplay between the various forms of data and conceptualization. The product of this conceptualization was not a formal model or theory, but rather a set of theoretical statements about what is involved in the acquisition of interactional competence by newcomers to school. This grounded theory can be summarized by the following statements:[3]

1. The school day is comprised of a series of interactional contexts, each placing particular behavioral demands on participants.

2. Being socially competent entails knowing what context one is in and what behavior is appropriate to that context.

3. Newcomers to school must learn to interpret appropriately the contextualization cues that participants make available to one another through interaction. To do this, newcomers must have sufficient experience in "getting through" contexts before interaction will begin to establish expectations about co-occurrence so that changes in behavior may be appropriately associated with changes in presuppositions about status, role, and activity.

4. The recognition of contextual shifts is an important part of interactional competence. Since participants both create and interpret interactional contexts, it is necessary for them to keep each other informed by their linguistic and nonlinguistic behavior related to "who we are" and "what we are doing." In so doing, contextual shifts are effectively communicated ("cued") to each other.

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[3] I want to thank Susan Florio for providing this summary list of her theoretical statements.

5. In school, the teacher is the arbiter of social control, so much of the responsibility for cuing contextual shifts falls to her/him. However, since life in classrooms is jointly produced, behavior of the students influences the teacher's contextualizing behavior. In the highly evaluative climate of the school, a newcomer's failure to perceive or behave appropriately in response to contextualization cues can be misconstrued as evidence of intellectual deficiency, uncooperativeness, etc.

6. In school, the contexts for interaction cued by participants are frequently complex and multidimensional. It is not necessarily the case that all participants in a classroom lesson share the same interactional context or that each participant finds her/himself operating within only one context at any given time.

A Study of Teacher Planning

A second example of generating grounded theory in research on teaching is a study of teacher planning I recently completed at the Institute for Research on Teaching (Yinger, 1977). This study investigated teacher planning by means of a detailed case study of the processes involved in one elementary (first-second grade) teacher's planning decisions during a five-month period of instruction. The study was designed to address a need for descriptions and theoretical models of planning processes and to examine the usefulness of certain decision-modeling methods for describing complex decisions as they occur in field settings. To accomplish this, I used the perspectives and methodologies of both ethnography and information-processing psychology.

The study involved two phases of data collection. In the first 12 weeks, I spent approximately 40 full days as a participant-observer, recording the teacher's activities in both the preactive and interactive teaching phases. Also during this phase, the teacher's planning decisions were recorded as she "thought aloud" during her planning sessions. The second phase of the data collection further investigated the teacher's planning by observing

her behavior in the Teacher Planning Shell (a simulation task developed for this study) and in three judgment tasks examining the teacher's perceptions of her students and instructional activities. Additional classroom observations and interviews were also conducted during this phase.

Two central aspects of the teacher's planning and instruction that emerged in this study were planning for instructional activities and the use of teaching routines. I described activities as the basic structural units of planning and action in the classroom. They were self-contained, organizational units functioning as "controlled behavior settings" that were shaped and molded by the teacher to conform to her perceptions and purposes. Seven features of instructional activities were identified as important considerations in planning decisions, including location, structure and sequence, duration, participants, acceptable student behavior, instructional moves or routines, and content and materials.

Teaching routines emerged as another distinctive feature of the teacher's planning technology. Much of this teacher's planning behavior could be portrayed as the selection, organization, and sequencing of routines developed as a result of experience. Four types of teaching routines were described in this study: activity routines, instructional routines, management routines, and executive planning routines. Functionally, I characterized routines as methods used to reduce the complexity and increase the predictability of classroom activities, thus increasing flexibility and effectiveness.

In addition to describing one teacher's planning, a goal of this study was to formulate a general model of the teacher planning process. There were two major purposes for the model: (1) to describe and represent in a schematic form speculations about the components of teacher planning and their

interrelationships, and (2) to serve as a basis for further theory and research on teacher planning.

The process model developed was grounded on three data bases. The first was the data collected in the field research portion of the study. By the end of the field research, many things were known about this teacher's planning. It was known that most of her planning focused on instructional activities. Many of these activities were well routinized, and by winter term planning time was taken up primarily by planning for social studies and science units. The teacher's planning could be described at five levels, and each level could be distinguished in terms of goals, information used, the form of the plan, and the criteria for judging planning effectiveness. Also, choice (the selection among alternatives) was not a prominent activity in her planning. Rather, it was characterized by the development and elaboration of activities over time, which took place as activities passed from general to more specific levels of planning. Also prominent in this teacher's planning was her reliance on past experience -- what seemed to work well or didn't work with previous classes.

The second data source for this model came from other studies of teacher planning. Two especially interesting findings cited in the literature were the failure to identify objectives as a primary aim of teacher decision making during the planning process (Zahorik, 1975; Peterson, Marx, & Clark, 1978) and the lack of well-developed alternatives in teachers' plans (Morine, 1976). Both of these findings supported the notion that teacher planning in practice is not characterized by processes advocated by the rational choice model of planning (Simon, 1957; Tyler, 1950). Rather than being dominated by decisions about objectives and alternatives, these studies

indicated a greater concern for content and activities.

The third source of data for the model was psychological studies of problem solving and planning conducted in deliberative situations in mathematical problem solving (Selz, 1922, 1924), chess playing (de Groot, 1965), musical composition (Bahle, 1930, 1936), art (Getzels & Csickszentmihalyi, 1976), and architectural design (Eastman, 1970a, 1970b; Baer, 1976). The similarities between the teacher planning situation and that of selecting a move in chess, composing a musical or visual composition, or planning for space utilization in a building suggested the usefulness of adopting concepts from research on these thinking processes.

The focus of the planning model generated in this study is on the individual, preactive, deliberative information processing involved in planning from an initial idea to its implementation. The model denotes from traditional models of planning primarily in that the emphasis is on the discovery and design processes in planning rather than on the choice processes. In short, the model portrays planning as "purposeful problem solving" as opposed to "rational choice."

Three stages of planning are represented in the process model:

Stage I - Problem Finding

Stage II - Problem Formulation/Solution (Design)

Stage III - Implementation, Evaluation, and Routinization.

Problem finding (Stage I) refers to the process of becoming aware of what specific problem needs to be solved within a general, non-specified problem situation. In the context of teacher planning, problem finding refers to the "discovery" of a potential instructional idea that requires further planning and deliberation. This idea is referred to as a "problem" since at

this stage in planning it is still not known whether the idea can be realized in the classroom and, if so, how it will be done.

Problem finding is portrayed as involving interaction among the planning dilemma confronting the teacher (arising from the general teaching dilemma), teaching knowledge and experience, teaching goals, and the teaching materials available. The sensing, searching, generating, and manipulating of ideas based on these elements is referred to as the discovery cycle. The result of this cycle is a statement of a problem (idea) in the form of an "initial problem conception" which becomes the basis for further elaboration (planning).

The second stage in the model of teacher planning involves problem formulation and solution. The basic assumption made in this stage is that problem formulation is an essential element in problem solving and that the two processes proceed hand-in-hand. The interweaving of these two processes is necessary because of the openness of the planning problem situation. Before a problem may be solved, it must first be discovered and then formulated into a manageable state.

The primary mechanism of problem formulation and solution is referred to as the design cycle. Here problem solving is portrayed as a design process involving progressive elaboration of plans or activities over time. The dominant feature of the design cycle is its phase structure. The progressive development and solution of the planning problem takes place as it cycles through phases of elaboration, investigation, and adaptation. As a problem progresses through these three phases of design, two major aspects of the thought process are involved. Elaboration and investigation draw on the planner's repertoire of problem-solving methods (knowledge and experience),

and adaptation is based upon the planner's total problem conception.

There are two other important general features of the design cycle. First, the process is serial in nature and only one problem is elaborated at a time. Elaboration, investigation, and adaptation continue until the problem is "solved" or until it is rejected as unworkable. The second feature is that the process happens over time. The length of the cycle can vary, however. At its longest, it may continue across several levels of planning. For instance, a unit activity might be progressively planned over a period of several weeks. At the other extreme, the cycle may last only minutes if an initial problem conception requires only minor elaboration to become workable or if it is quickly rejected after several cycles because of the discovery of a major obstacle to its potential workability.

The final stage of the model is where the activity is actually implemented and evaluated in the classroom. It is not preactive planning, as such, but it does provide the final link in the instructional planning process. It reflects the provisional nature of the results of the design process by proposing an actual "trying out" of the solution followed by an evaluation. Also, the results of this process feed back to and build up the repertoire of knowledge and experience which, in turn, becomes an important component in subsequent planning.

Summary and Conclusions

With this paper I attempted to present a case for a new emphasis on theory generation in research on teaching. I believe that research in this area of education is in need of a healthy dose of conceptual effort to build a theoretical base for the interpretation of current research and for the guidance of research in the future.

Some of the problems contributing to the current dearth of educational theorizing were discussed, with a focus on generally-held conceptions about the nature of theorizing and the lack of theoretical training of most researchers. Several different notions of theory and theory building were presented with a focus on grounded theory (á la Glaser & Strauss 1967).

I have proposed grounded theory as a practical method of theory building based on field research data. This technique regards theory generation as an integral part of the research process and promotes an ongoing conceptual interaction with the data. Two examples from research on teaching illustrated the possibility of developing grounded theory from field-based research. My study of teacher planning showed that this method of theoretical conceptualization is amenable to cognitive research as well as to the kind of social research illustrated by Florio's study of interactional competence. These two examples also illustrated the variety of theoretical products that grounded theory may generate. My own theoretical work has been summarized by a conceptual model of the teacher planning process, while Florio's work has produced a series of theoretical statements about the acquisition of interactional competence.

Until now, this discussion of grounded theory has focused on advocating a method for the generation of descriptive theory in research on teaching. Grounded theory may also be an effective method for the generation of prescriptive theory. Research in education should be concerned about "what should be" in teaching and learning as well as with "what is". Schwab (1969) has argued that normative models of education must be grounded on both the descriptive and the theoretical. Research needs to establish a dialectic between theory and practice, since neither source alone is sufficient as a

basis for prescriptive models of action. Theory when generated apart from practice deals with a problem abstractly and can unrealistically narrow the real state of affairs. This is of little value to the practitioner who must operate with concrete instances in all their complexity. On the other hand, current practice cannot be used as the sole criterion. A problem with most practice is that once it seems to be functioning satisfactorily, other alternatives are rarely considered even though they may be more efficient or effective. Thus, theory and practice must supplement each other by means of practical deliberation and reason. The generation of grounded theory from field research may be a good way to establish this long needed dialectic.

References

Atkinson, J.W.,& Feather, N.T. (Eds.) A theory of achievement motivation. New York: John Wiley, 1966.

Baer A.E. A cognitive model of problem formation in design. Research Rep.No. 62. Carnegie-Mellon University, Institute of Physical Planning, 1976.

Bahle, J. Zur Psychologie des Musik-Alischen gestaltens, eine untersuchung uber das komponieren auf experimenteller und historischer grundlage., Archiv fur die gesamte psychologie, 1930, 74, 289-390.

Bahle, J. Der musikalische schaffungsprozess. Psychologie der schopferischen erlebniss und antrieb-formen. Leipzig: Hirzel, 1936.

Bloom, B.S. (Ed.) Taxonomy of educational objectives: The classification of educationl goals. Handbook 1 - cognitive domain. New York: David McKay, 1956.

Boring, E.G. The role of theory in experimental psychology. In R.I. Watson & D.T. Campbell (Eds.), History, psychology, and science: Selected papers by E.G. Boring. New York: John Wiley, 1963.

de Groot, A.D. Thought and choice in chess. The Hague:Mouton, 1965.

Eastman, C.M. On the analysis of intuitive design processes. In G. Moore (Ed.), Emerging methods in environmental design and planning. Cambridge: MIT Press, 1970. (a)

Eastman, C.M. Problem solving strategies in design. Carnegie Mellon University, School of Urban and Public Affairs, Reprint No. 23, 1970. (b)

Festinger, L. A theory of cognitive dissonance. Evanston, Ill.: Row, Peterson, 1957.

Florio, S. Learning how to go to school: An ethnography of interaction in a kindergarten first-grade classroom. Unpublished doctoral dissertation, Harvard University, 1978.

Gage, N.L. Paradigms for research on teaching. In N.L. Gage (Ed.), Handbook of research on teaching. Chicago: Rand McNally, 1963.

Gagné, R.M. The conditions of learning (2nd ed.). New York: Holt, Rinehart and Winston, 1970.

Getzels, J.W., & Csickszentmihalyi, M. The creative vision: A longitudinal study of problem finding in art. New York: John Wiley and Sons, 1976.

Glaser, B.,& Strauss, A. The discovery of substantive theory: A basic strategy underlying qualitative research. The American Behavioral Scientist, 1965, 8, 5-12.

Glaser, B., & Strauss, A. The discovery of grounded theory: Strategies for qualitiative research. Chicago: Aldine, 1967.

Guilford, J.P. The nature of human intelligence. New York: McGraw-Hill, 1967.

Kaplan, A. The conduct of inquiry: Methodology for behavioral science. San Francisco: Chandler, 1964.

Kliebard, H.M. Curriculum thoery: Give me a "for instance". Curriculum Inquiry, 1977, 6, 257-269.

Marx, M.H. The general nature of theory construction. In M.H. Marx (Ed.), Theories in contemporary psychology. New York: Macmillan, 1963.

McDonald, F.J., & Allen, D.W. Training effects of feedback and modeling procedures on teaching performance (Technical Report No. 3). Stanford, Calif.: Stanford Center for Research and Development in Teaching, 1967.

Merton, R.K. Social theory and social structure. Glencoe, Ill.: Free Press, 1957.

Merton, R.K. On theoretical sociology. New York: Free Press, 1967.

Mitzel, H.E. Increasing the impact of theory and research on programs of instruction. Journal of Teacher Education, 1977, 28, 15-20.

Morine, G. Special Study C: A study of teacher planning (BTES Technical Report 76-3-1). San Francisco: Far West Laboratory for Educational Research and Development, 1976.

Nagel, E. Philosophy of science and educational theory. Studies in Philosophy and Education, 1969, 7, 5-27.

Peterson, P.L., Marx, R.W., & Clark, C.M. Teacher planning, teacher behavior, and student achievement. American Educational Research Journal, 1978, 15(3), 417-432.

Schwab, J. The practical: A language for curriculum. School Review, 1969, 78, 1-23.

Selz, O. Zur Psychologie des produktiven denkens und des irrtums. Bonn: Friedrich Cohen, 1922.

Selz, O. Die gesetze de produktiven und reproduktiven geistestatigkeit. Kurzgefassle Darstellung. Bonn: Friedrich Cohen, 1924.

Shulman, L.S. Reconstruction of educational research. Review of Educational Research, 1970, 40, 371-395.

Simon, H.A. Administrative behavior: A study of decision-making processes in administrative organizations (2nd ed.). New York: The Macmillan Co., 1957.

Snow, R.E. Theory construction for research on teaching. In R.M.W. Travers (Ed.), Second handbook of research on teaching. Chicago: Rand McNally, 1973.

Snow, R.E. Individual differences and instructional theory. Educational Researcher, 1977, 6, 11-15.

Turner, M.B. Philosophy and science of behavior. New York: Appleton-Century-Crofts, 1967.

Tyler, W. Basic principles of curriculum and instruction. Chicago: University of Chicago Press, 1950.

Yinger, R.J. A study of teacher planning: Description and theory development using ethnographic and information-processing methods. Unpublished doctoral dissertation, Michigan State University, 1977.

Zahorik, J.A. Teachers' planning models. Educational Leadership, 1975, 33, 134-139.

Zetterberg, H.Z. On theory and verification in sociology. Totowa, N.J.: Bedminster Press, 1965.