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RESEARCH ON TEACHER PLANNING:
AN INVENTORY OF THE KNOWLEDGE BASE

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Abstract

This paper reviews recent research on teacher planning and draws implications from it for teacher education. The research literature is organized to answer three questions: What are the types and functions of teacher planning? What models have been used to describe the process of planning? What is the relationship between teacher planning and subsequent action in the classroom? Descriptive research has documented eight different but interdependent types of teacher planning and several functions of planning in addition to preparation for instruction. Current models of the planning process are cyclical rather than linear, and learning outcomes for students are brought into the planning process at many points during the cycle. Planning is used to anticipate, organize, and set the stage for classroom interaction, but influences the fine details of teacher-student interaction only indirectly. The review concludes with several recommendations for the preparation of beginning teachers regarding planning.
RESEARCH ON TEACHER PLANNING:
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Christopher M. Clark

This review is an attempt to determine what the literature of research on teacher planning has to offer that might be called essential knowledge for beginning educators. My task is twofold: to summarize what comprises this body of literature and to offer some ideas about how research on teacher planning can be applied to the practice of teacher education. Knowledge about teaching derived from research is important to the preparation of new teachers and to the professional development of more experienced teachers. But research-based knowledge, no matter what its quality or extensiveness, will never provide a complete and sufficient basis for teacher education or for the practice of teaching. Research can help educators to think about teaching and teacher preparation more clearly, but these professions have fundamentally practical, clinical, and artistic dimensions to them that are beyond the scope of the social and behavioral sciences. Excellence in teaching and in teacher preparation are not puzzles to be solved once and for all by a research breakthrough. Rather, they are ideals to be pursued continually by dedicated professionals who draw upon all of their knowledge, insight, imagination, and creativity to make the most of the ever-changing present.

This paper deals with (1) the classes of knowledge derived from research on teaching, (2) a brief history of the beginnings of research on teacher

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1This paper was presented to the American Association of Colleges for Teacher Education, Detroit, Michigan, February 1983.

2Christopher Clark coordinated the IRT's now-completed Teacher Planning Project. He currently co-coordinates the Written Literacy Project and is a professor of education at Michigan State University.
thinking, (3) a summary of the main questions and findings of research on teacher planning, and (4) what I have learned from this research that I nominate as essential knowledge for beginning educators.

Research on Teaching and Teacher Education

At least two kinds of knowledge and two kinds of research relate to essential knowledge for beginning teachers. The first kind of research is that which is collectively called "teacher effectiveness research." This paradigm typically uses correlational and quasi-experimental designs to detect relationships between relatively specific teacher-behavior variables, on the one hand, and student-achievement variables, on the other. These teacher-behavior variables are defined a priori and incorporated into an observation schedule or manipulated through training.

Most of this teacher effectiveness research has been concerned with discovery of procedural knowledge about effective teaching, that is, with discovering how effective teachers behave and how teacher educators can help prospective teachers to behave likewise. Teacher effectiveness research has produced a large and valuable knowledge base about the skills that teachers have used to orchestrate clear, efficient, and well-organized classroom instruction and that have had measurable effects on student achievement (usually decoding of text and arithmetic computation).

It is a relatively straightforward process to translate knowledge from teacher effectiveness research into prescriptions for teacher education. Indeed, the curricula of most microteaching clinics and the content of competency-based, teacher education programs are direct translations of this research base into teacher education.

But I believe a second category of knowledge is essential for beginning educators: propositional knowledge. This is the kind of knowledge that
something exists, is true, or is important in particular circumstances. Propositional knowledge is definitional and conceptual rather than prescriptive. It provides educators with the conceptual categories to organize, visualize, make sense of, and communicate about complex experiences like teaching. Research on teacher thinking, planning, and decision making aims at increasing the propositional knowledge base about the practice of teaching and communicating that propositional knowledge to beginning and experienced educators alike. This largely descriptive, second kind of research on teaching depends heavily on the reflection and self-reports of teachers to produce these descriptions in a way that is faithful to the teachers' own perspective.

Of course, teacher effectiveness research has provided educators with some conceptual contributions, such as "wait time," "time on task," and "higher order questions." And I suspect that research on teacher thinking will also provide educators with knowledge about "planning skills" and "decision-making skills" at some future time. But right now these two paradigms for research on teaching differ in their primary goals. Teacher effectiveness researchers are primarily concerned with producing knowledge about the observable behavior of effective teachers. Researchers on teacher thinking pursue knowledge about how teachers' minds work as they plan, how they make decisions, teach their students, and reflect on their experiences.

Fortunately, these differences do not make for direct competition between paradigms but foster a complementary relationship. Jackson (1966), in his paper entitled "The Way Teaching Is," argues that there could be a mutually supportive relationship between teacher effectiveness research and research on teacher thinking. Calling the preactive domain of teacher thinking the "hidden side" of the profession, Jackson reasoned that "a glimpse at this 'hidden side' of teaching may increase our understanding of some of the
more visible and well known features of the process" (p. 12). In so saying, Jackson implied that neither kind of knowledge is sufficient, by itself, to provide an adequate basis for understanding teaching.

Jackson's proposition reminds me of a book that I read once on fly fishing. I'm a novice trout fishermen, and this book was written for beginners like me. About three-quarters of the book consisted of procedural knowledge: how to select balanced tackle, how to perform various casts, and even how to keep records of successes and failures. But the remaining quarter of the book consisted of the author's vivid descriptions of some of his own fly fishing episodes. Both kinds of information were important to me as a learner. The narratives permitted me to visualize myself in a real setting using the skills diagrammed and described elsewhere in the book. The skill instruction gave me an expert's ideas about what and how I should practice and behave on a trout stream, but not how to "think like a fisherman." Neither part of the book would have been sufficient, by itself, to get me out on a trout stream this spring with much chance of satisfaction. But, in combination, the generic, abstract, procedural knowledge and the rich, vivid, situation-specific, propositional knowledge made a powerful and complete package. I believe that this combination of generic skills training and the study of analysis of written case studies of teaching could be used to good effect in teacher preparation.

Research on Teacher Thinking

The thinking, planning, and decision making of teachers constitutes a large part of the psychological context within which curriculum is interpreted and acted upon and within which teachers teach and students learn. Teacher behavior is substantially influenced and even determined by teachers' thought processes. These are the fundamental assumptions behind the literature that
has come to be called research on teacher thinking. Researchers on teacher thinking seek first to describe fully the mental lives of teachers. Second, they hope to understand and explain how and why the behaviorally observable activities of teachers' professional lives take on the forms and functions that they do. They ask when and why teaching is difficult, and how human beings manage the complexity of classroom teaching. The ultimate goal of research on teachers' thought processes is to construct a portrayal of the cognitive psychology of teaching for use by educational theorists, researchers, policy makers, curriculum designers, teacher educators, school administrators, and teachers themselves.

Jackson's (1968) book *Life in Classrooms* reports one of the earliest empirical attempts to describe and understand the mental constructs and processes that underlie teacher behavior. His descriptive study departed strikingly from contemporary research on teaching and ill fit the then-dominant teacher effectiveness research paradigm. In 1968 it was difficult to see how description of life in a few classrooms could contribute much to the quest for teaching effectiveness. Jackson's contribution to research on teaching, however, was conceptual. He portrayed the full complexity of the teacher's task, made conceptual distinctions that fit the teacher's frame of reference (such as that between the proactive and interactive phases of teaching), and called educators' attention to the importance of describing the thinking and planning of teachers toward more fully understanding classroom processes.

In Sweden, Dahllof and Lundgren (1970) conducted a series of studies of the structure of the teaching process as an expression of organizational constraints. While this work was primarily concerned with the effects of
contextual factors on teaching, it revealed some of the mental categories that teachers use to organize and make sense of their professional experiences. Dahllof and Lundgren's contribution, like Jackson's, was primarily conceptual.

Of particular significance in the Dahllof and Lundgren research was the phenomenon of the "steering group," a small subset of a class (ranging in achievement level from the 10th to the 25th percentile) that teachers used as an informal reference group for decisions about pacing a lesson or unit. During whole-class instruction, when the students in the steering group seemed to understand what was being presented, the teachers would move the class on to a new topic. But when the teachers believed that the steering-group students were not understanding or performing up to standards, the teachers slowed the pace of instruction for all. The steering group is important as a concept both because of its empirical verifiability and because it shows clearly how teachers' mental categories can have significant pedagogical consequences.

In June 1974 the National Institute of Education convened a week-long National Conference on Studies on Teaching to create an agenda for future research on teaching. The participants in this planning conference were organized into 10 panels, and each panel produced a plan for research in their area of expertise. The deliberations of Panel 6, Teaching as Clinical Information Processing, were of particular importance to the development of research on teacher thinking. Lee S. Shulman, as chair of Panel 6, had assembled a diverse group of experts on the psychology of human information processing, the anthropology of education, classroom interaction research, and the practical realities of teaching. Panel 6's report (National Institute of Education, 1975) provided a rationale for and defined the assumptions and the domain of a proposed program of research on teachers' thought processes. The panelists argued that research on teacher thinking is necessary if
educators are to understand that which is uniquely human in the process of teaching:

It is obvious that what teachers do is directed in no small measure by what they think. Moreover, it will be necessary for any innovations in the context, practices, and technology of teaching to be mediated through the minds and motives of teachers. To the extent that observed or intended teacher behavior is "thoughtless," it makes no use of the human teacher's most unique attributes. In so doing, it becomes mechanical and might well be done by a machine. If, however, teaching is done and, in all likelihood, will continue to be done by human teachers, the question of the relationships between thought and action becomes crucial. (p. 1)

Beyond this logical argument for attending to teacher thinking, Panel 6's report went on to cite research on human information processing, which indicates that a person, when faced with a complex situation, creates a simplified model of that situation and then behaves rationally in relation to that simplified model. The resulting behavior, as indicated by Simon (1957) is not even approximately optimal with respect to the real world. To predict . . . behavior we must understand the way in which this simplified model is constructed, and its construction will certainly be related to (one's) psychological properties as a perceiving, thinking, and learning animal. (cited in National Institute of Education, 1975, p. 2).

To understand, predict, and influence what teachers do, the panelists argued, researchers must study the psychological processes by which teachers perceive and define their professional responsibilities and situations.

Panel 6's report is explicit about the view of the teacher that guided the panelists in their deliberations and recommendations for research:

The Panel was oriented toward the teacher as clinician, not only in the sense of someone diagnosing specific forms of learning dysfunction or pathology and prescribing particular remedies, but more broadly as an individual responsible for (a) aggregating and making sense out of an incredible diversity of information sources about individual students and the class collectively; (b) bringing to bear a growing body of empirical and theoretical work constituting the research literature of education; somehow (c) combining all that information with the teacher's own expectations, attitudes, beliefs, purposes . . . and (d) having to respond, make judgments, render decisions, reflect, and regroup to begin again (National Institute of Education, 1975, pp. 2-3).
In short, Panel 6's report presented an image of the teacher as a professional who has more in common with physicians, lawyers, and architects than with technicians who execute skilled performances according to prescriptions or algorithms defined by others. This view of the teacher as professional has had a profound effect on the questions asked, methods of inquiry employed, and the form of the results reported in research on teacher thinking. Moreover, Panel 6's report influenced new initiatives in research on teaching in a more instrumental way—in 1975 the National Institute of Education issued a request for proposals for an Institute for Research on Teaching that would focus on research on teaching as clinical information processing. Such an institute was established at Michigan State University in 1976, and this organization initiated the first large program of research on the thought processes of teachers. With this as background, I now want to focus more closely on one part of the research on teacher thinking: research on teacher planning.

**Planning Defined**

As a subject of research, planning has been defined in two ways. First, planning is a basic psychological process in which a person visualizes the future, inventories means and ends, and constructs a framework to guide his or her future action—what my colleague Robert Yinger calls "thinking in the future tense." This first definition leads to research on the process of planning that draws heavily from the theories and methods of cognitive psychology.

At another level of abstraction, planning could be defined (somewhat circularly) as "the things that teachers do when they say that they are planning." This second definition suggests a phenomenological or ethnographic approach to research on teacher planning, in which the teacher takes on an important role as informant or even as research collaborator.
Both definitions of teacher planning are represented in the research literature either explicitly or implicitly. I believe that the differences in thought about what planning is account for the variety of methods of inquiry in use and for the challenge that reviewers of this literature face in pulling together a coherent summary of what has been learned. Planning is challenging to study because it is both a psychological process and a practical activity.

Through examining the results of selected studies of teacher planning, I hope to answer three major questions that researchers have been pursuing: (1) What are the types and functions of teacher planning? (2) What models have been used to describe the process of planning? and (3) What is the relationship between teacher planning and subsequent action in the classroom?

Types and Functions of Teacher Planning

What are the different kinds of planning that teachers do, and what purposes do they serve? The answer to both parts of this question seems to be "many." That is, there are many different kinds of planning in use and many functions served by these processes. More specific answers come from several recent studies of teacher planning.

Two of these studies were designed to (among other things) determine what kinds of planning experienced teachers engage in. Yinger (1977) studied the planning decisions of a single first/second-grade teacher over a five-month period. Using interviews, thinking aloud, and extensive classroom observations, Yinger determined that this teacher engaged in five different kinds of planning: yearly, term, unit, weekly, and daily. The "activity" was found to be the basic unit of daily and weekly planning. The teacher drew heavily on routines established early in the school year that incorporated learning outcomes for students. These routines were seen as functioning to reduce the complexity and increase the predictability of classroom activities.
In a second study by Clark and Yinger (1979), 78 teachers wrote descriptions of general characteristics of their planning and also selected and described three examples of their own plans representing the three most important types of planning that they did during the year. The teachers reported that they engaged in the following eight different types of planning (in order of frequency of mention): weekly, daily, unit, long-range, lesson, short-range, yearly, and term planning. Unit planning was most often identified as the most important type of planning, followed by weekly and daily planning. Only 7% of the teachers in this study listed lesson planning among the types of planning most important to them.

The dynamic relationships among different types of planning have also been studied to a modest degree. Two studies by Greta Morine-Dershimer (Morine-Dershimer, 1979; Morine-Dershimer & Vallance, 1976) suggest that teachers' plans are seldom fully reflected in their written plans. Rather, the details recorded on a written plan are nested within more comprehensive planning structures, called "lesson images" by Morine-Dershimer. These lesson images, in turn, are nested within a still larger construct called the "activity flow" by Joyce (1978-1979). For elementary teachers the activity flow encompasses the year-long progress of a class through each particular subject and the balance of activities across subjects in a school day or week.

Further support for the idea that teacher planning is a nested process comes from a study by Clark and Elmore (1979). They interviewed and observed five elementary teachers during the first five weeks of the school year and found that their planning was primarily concerned with setting up the physical environment of the classroom, assessing student abilities, and establishing the social system of the classroom. By the end of the fourth week of school,
a system of schedules, routines, and groupings for instruction was established. These structural and social features of the classroom then persisted throughout the school year and served as the framework within which particular activities and units were planned. Other studies of the first weeks of school also support the conclusion that, to a significant degree, the "problem space" (after Newell & Simon, 1970) within which teacher and students operate, is defined early, changes little during the course of the school year, and exerts a powerful, if subtle, influence on thought and behavior (e.g., Anderson & Evertson, 1978; Buckley & Cooper, 1978; Shultz & Florio, 1979; Tikunoff & Ward, 1978).

**Functions of Planning**

The research that speaks to the functions of teacher planning suggests that there are almost as many reasons to plan as there are types of planning. In the Clark and Yinger study (1979) mentioned earlier, the teachers' written responses to a question about why they plan fell into three clusters: (1) planning to meet immediate personal needs (e.g., to reduce uncertainty and anxiety, to find a sense of direction, confidence, and security), (2) planning as a means to the end of instruction (e.g., to learn the material, to collect and organize materials, to organize time and activity flow), and (3) direct uses of plans during instruction (e.g., to organize students, to get an activity started, to aid memory, to provide a framework for instruction and evaluation).

An ethnographic study of the planning of 12 elementary teachers by McCutcheon (1980) also confirmed that some teachers plan in order to meet the administrative requirement that they turn in their plans to the school principal on a regular basis. These teachers also indicated that special
plans were necessary for use by substitute teachers in the event of absence of the regular teacher. These plans for substitute teachers were special both because they included a great deal of background information about how the system in a particular classroom and school operated and because the regular teachers tended to reserve the teaching of what they judged to be important material for themselves, planning filler or drill and practice activities for the substitute teacher. (Incidentally, I have long believed that a great deal could be learned about teacher thinking and teacher planning from the vantage point of a substitute teacher. I hope that someday someone will do that study.)

Planning and the Content of Instruction

The most obvious function of teacher planning in American schools is to transform and modify curriculum to fit the unique circumstances of each teaching situation. In one of the only studies of yearly planning to date, Clark and Elmore (1981) asked a second grade teacher to think aloud while doing her yearly planning for mathematics, science, and writing. The primary resources she used in yearly planning were curriculum materials (especially the teacher's guides), her memory of classroom interaction during the previous year, and the calendar for the coming school year. The process of yearly planning, typically done during the summer months, consisted of the teacher reviewing the curriculum materials that she would be using during the coming year, rearranging the sequence of topics within curricula, and adding and deleting content to be taught. A broad outline of the content to be taught emerged from a process of mental review of the events of the past year combined with adjustment of the planned sequence and pace of teaching to accommodate new curriculum materials and new ideas consistent with the teacher's implicit theory of instruction.
Through her review of the past year, reflection on her satisfaction with how things went, and modifications of the content, sequence, and planned pace of instruction, the teacher's yearly planning process served to integrate her own experience with the published materials, establishing a sense of ownership and control of content to be taught (Ben-Peretz, 1975). Yearly planning sessions satisfied this teacher that she had available the resources to provide conditions for learning at least equal to those she had provided during the previous year. Yearly planning decreased the unpredictability and uncertainty that attend every teaching situation.

The Clark and Elmore (1981) study of yearly planning supports the idea that published curriculum materials have a powerful influence on the content and process of teaching. In a series of studies of teacher planning for sixth grade science instruction, Smith and Sendelbach (1979) pursued this idea at the level of unit planning. Working with the SCIS\textsuperscript{3} science curriculum, Smith and Sendelbach compared explicit directions for a unit of instruction provided in the teacher's manual with four teachers' transformations of those directions into plans, and finally with the actual classroom behavior of one of the four teachers while teaching the unit.

Observation of the four teachers during planning sessions combined with analysis of think-aloud and stimulated-recall interview data revealed that the principal product of a unit-planning session was mental picture of the unit to be taught, the sequence of activities within it, and of the students' probable responses. These mental plans were supplemented and cued by sketchy notes and lists of important points that the teachers wanted to be sure to remember.

\textsuperscript{3}Science Curriculum Improvement Study.
Smith and Sendelbach characterized the process of activating a unit plan as one of reconstructing the plan from memory, rather than of carefully following the directions provided in the teacher's guide.

Smith and Sendelbach are critical of the loose coupling between curriculum and instruction because of potential they see for distortions or significant omissions in the content of science instruction. From their classroom observations of one experienced teacher implementing her unit plan, they concluded that the quality of instruction was degraded somewhat by both planned and unintended deviations from the SCIS materials. They attributed these deviations to the teacher's limited subject-matter knowledge, difficulty in finding information in the teacher's guide, and to the presence of inherently complex and confusing concepts. The researchers suggest that the phenomenon of heavy dependence on teacher's guides in unit planning provides an opportunity to improve the quality of instruction by revising these guides to be more clear, more comprehensive, and more prescriptive.

Few studies have attempted to describe teacher planning as it occurs naturally in all its variety. Virtually all but two or three studies of teacher planning focus on a single type of planning. Educators could benefit from more studies that describe the full range of the kinds of planning that teachers do during the school year and the interrelationships between these kinds of planning.

In addition, the modest to insignificant role of lesson planning for experienced teachers is interesting. Lesson planning is the one type that is addressed directly in all teacher preparation programs. Yet it is rarely claimed as an important part of the repertoire of experienced teachers. This anomaly suggests that perhaps some of our teacher preparation practices bow
more to the task demands of the university than to those of the teaching profession.

Finally, I believe that the functions of teacher planning that are not directly and exclusively concerned with a particular instructional episode have been slighted. Researchers and teacher educators should think more broadly about what teachers are accomplishing in their planning time, and avoid narrow comparisons of what was planned with what was taught as the only criterion for evaluation.

What Models Describe Teacher Planning?

The logic of an industrial production system has given educators the most widely prescribed model for teacher planning (Tyler, 1950). This linear model consists of a sequence of four steps: (1) specify objectives, (2) select learning activities, (3) organize learning activities, and (4) specify evaluation procedures. This linear model has been recommended for use at all levels of educational planning, and hundreds of thousands of educators have been trained in its use. It was not until 1970 that researchers began to examine directly the planning processes in use by teachers and to compare what was being practiced with what had been prescribed.

Taylor (1970) conducted a study of teacher planning in British secondary schools. The study was directed toward examining how teachers planned syllabi for courses. Using group discussions with teachers, analyses of course syllabi, and a questionnaire administered to 261 teachers of English, science, and geography, Taylor came to the following general conclusions: The most common theme found across all of the modes of data collection was the prominence of pupils—their needs, abilities, and interests. Following these, in order of importance, were the subject matter, goals, and teaching methods.
In planning for courses of study, evaluation emerged as being of little importance, as did the relation between one's own courses and the curriculum as a whole. Taylor concluded that most course planning was unsystematic and only general in nature and that most teachers appear to be far from certain about what the planning process requires.

Through teacher ratings of the importance of various issues in curriculum planning and a factor analysis of their responses, Taylor identified four primary factors of interest to his sample of teachers. The results indicated that, when planning, the teachers tended to consider in order of importance: (1) factors associated with the teaching context (e.g., materials and resources), (2) pupil interests, (3) aims and purposes of teaching, and (4) evaluation considerations. Rather than beginning with purposes and objectives and moving to a description of learning experiences necessary to achieve the objectives as the linear-planning theorists propose, Taylor found that these teachers began with the context of teaching, next considered learning situations likely to interest and involve their pupils, and only after this considered the purposes that their teaching would serve. Another difference between Taylor's data and the Tyler model was that criteria and procedures for evaluating the effectiveness of their course of teaching was only a minor issue. These findings led Taylor to conclude that curriculum planning should begin with the content to be taught and with important contextual considerations (e.g., time, sequencing, resources). This should be followed by considerations of pupil interests and attitudes, aims and purposes of the course, learning situations to be created, the philosophy of the course, the criteria for judging the course, the degree of pupil interest fostered by the course, and finally, evaluation of the course.
Zahorik (1975) continued this line of inquiry by examining the use of behavioral objectives and the "separate ends-means" model and the use of the "integrated ends-means" model proposed by Eisner (1967). He asked 194 teachers to list in writing the decisions that they made prior to teaching and the order in which they made them. He classified these decisions into the following categories: objectives, content, activities, materials, diagnosis, evaluation, instruction, and organization. He found that the kind of decision made by the greatest number of teachers concerned pupil activities (81%). The decision most frequently made first was content (51%), followed by learning objectives (28%).

Zahorik concluded from this study that teacher planning decisions do not always follow linearly from a specification of objectives and that, in fact, objectives are not a particularly important planning decision in terms of quantity of use. He also argued, however, that the integrated ends-means model does not appear to be a functioning reality because of the relatively few teachers (only 3%) who reported beginning their planning by making decisions about activities.

More recently, researchers have turned their attention to describing teacher planning by observing and audiotaping teachers thinking aloud during planning sessions. Peterson, Marx, and Clark (1978) examined planning in a laboratory situation as 12 teachers prepared to teach a new instructional unit to groups of junior high school students with whom they had had no previous contact. These units were taught to three different groups of eight students on three different days. During their planning periods, teachers were instructed to think aloud, and their verbal statements were later coded into planning categories including objectives, materials, subject matter, and instructional process. The primary findings of this study were (1) that
teachers spent the largest proportion of their planning time dealing with the content to be taught; (2) after subject matter, teachers concentrated their planning efforts on instructional processes (strategies and activities); and (3) the smallest proportion of their planning time was spent on objectives. All three of these findings were consistent with those by Zahorik (1975) and Goodlad and Klein (1970). The third finding was also similar to results reported by Joyce and Harootunian (1964) and by Popham and Baker (1970).

The task demands on the teachers should be taken into account in interpreting these results. The researchers provided the teachers with unfamiliar materials from which to teach, and limited preparation time to 90 minutes immediately preceding teaching on each day of the study. Since the teachers did not know their students in advance, it follows that the emphasis in their planning would be on content and instructional processes. Finally, the researchers did provide the teachers with a list of six general teaching goals, expressed in terms of content coverage, process goals, and cognitive and attitudinal outcomes for students. Under these circumstances, it is not surprising that the teachers devoted little planning time to composing more specific objectives, and devoted the largest part of their planning time to studying the content and deciding how to teach it.

The findings of a study conducted in a classroom setting by Morine-Dershimer and Vallance (1976) were consistent with those of Peterson, Marx, and Clark (1978). Morine-Dershimer and Vallance collected written plans for two experimenter-prescribed lessons (one in mathematics and one in reading) taught by 20 teachers of second and fifth grades in their own classrooms to a small group of their students. Teacher plans were described by the researchers in terms of (1) specificity of written plans, (2) general format of plans, (3) statement of goals, (4) source of goal statement, (5) attention to pupil
background and preparation, (6) identification of evaluation procedures, and (7) indication of possible alternative procedures. In this study, teachers tended to be fairly specific and used an outline form in their plans. Their written plans reflected little attention to behavioral goals, diagnosis of student needs, evaluation procedures, and alternative courses of action. However, the teachers reported that writing plans for researcher-prescribed lessons was not typical of their planning, and observations of their classroom teaching behavior revealed that much of what the teachers had planned was not reflected in their written outlines (Morine-Dershimer, 1979).

In his five-month field study of one teacher, Yinger (1977) drew on his observations, interview data, and think-aloud protocols to create a theoretical model of the process of teacher planning. The following is a brief description of the model (from Clark & Yinger, 1977):

Three stages of planning were represented in the planning model. The first stage, problem finding, was portrayed as a discovery cycle where the teacher's goal conceptions, her knowledge and experience, her notion of the planning dilemma, and the materials available for planning interact to produce an initial problem conception worthy of further exploration. The second stage in the planning process was problem formulation and solution. The mechanism proposed for carrying out this process was the "design cycle." In this cycle, problem solving was characterized as a design process involving progressive elaboration of plans over time. Elaboration, investigation, and adaptation were proposed as phases through which plans were formulated. The third stage of the planning model involved implementation of the plan, its evaluation, and its eventual routinization. This stage emphasized the contribution of evaluation and routinization to the teacher's repertoire of knowledge and experience which in turn play a major role in future planning deliberations. (p. 285)

One of the most significant contributions of Yinger's way of conceptualizing the planning process is that his model is cyclical in two senses. Internally, the Yinger model postulates a recursive design cycle similar to the processes hypothesized to go on in the work of architects, physicians, artists, designers, and other professionals. Externally, the
Yinger model acknowledges that schooling is not a series of unrelated planning-teaching episodes, but that each planning event draws from prior planning and teaching experiences and that each teaching event feeds into future planning and teaching processes. The cycle is a continuous, year-long process, in which the boundaries between planning, teaching, and reflection are not sharp and distinct.

A later study by Clark and Yinger (1979) involved asking five teachers to plan a two-week unit on writing of their own devising that had never been taught before. The teachers kept journals documenting their plans and their thinking about planning during a three-week period, and they were interviewed twice each week. The journal-keeping and interviews continued and were supplemented by observations during the two-week period when the plans were being implemented.

Analysis supported the idea that unit planning was not a linear process moving from objectives through design of activities to meet objectives. Rather, it was a cyclical process, typically beginning with a general idea and moving through phases of successive elaboration. Some teachers spent a great deal of time and energy at the problem-finding stage, generating topics or ideas for their unit. The search process typical of this stage was distinctly different from the elaboration and refinement of the idea that took place in the subsequent problem-formulation/solution stage. These data are consistent with the planning process model developed earlier by Yinger (1977).

Individuals differed in their use of the model. Two of the teachers' unit plans consisted of a short problem-finding stage, brief unit planning, and considerable reliance on trying out activities in the classroom. This approach to planning was called "incremental planning." Teachers who planned incrementally employed a series of short planning steps, relying heavily on
day-to-day information from the classroom. The remaining three teachers' unit plans were characterized as products of "comprehensive planning," in which the teachers developed a thoroughly specified framework for future action. Comprehensive planning involved more attention to the unit as a whole, and more time and energy invested in specifying plans as completely as possible before beginning to teach. Both approaches to unit planning seemed to work well for the teachers who used them. Incremental planning saved time and energy while staying in touch with changing student states. Comprehensive planning provided a complete and dependable guide for teacher-student interaction for the whole course of a unit, reducing uncertainty and increasing the probability of achieving pre-specified objectives.

A final note on the models of planning issue comes from a recent University of Alberta doctoral dissertation by McLeod (1981). She approached the question of learning objectives in planning by asking not whether they are the starting point for planning but when teachers think about them. McLeod did a stimulated recall interview with each of 17 kindergarten teachers, using a videotape of a 20- to 30-minute classroom activity taught earlier that same day. The purpose of the interviews was to determine when intended learning outcomes were formulated in terms of four stages: (1) preactive 1: before planning activities or selecting materials; (2) preactive 2: after planning but before teaching; (3) interactive: during the act of teaching; and (4) postactive: during reflection after a teaching episode (after Pylypiw, 1974). The interviews also revealed how different types of intended learning outcomes (cognitive, social, and psychomotor) were distributed.

Averaging the responses across the 17 teachers, McLeod found that the largest percentage of intended learning outcomes occurred during the interactive stage (45.8%). This was followed by Preactive Stage 1 (26.5%),
Preactive Stage 2 (19.5%), and the postactive stage (8.2%). The data also indicated that 57.7% of the intended learning outcomes were categorized as cognitive, 35% were classified as social or affective, and 7.2% as psychomotor or perceptual. Interestingly, the social/affective intended learning outcomes were primarily identified during the interactive stage, while cognitive outcomes predominated in the preactive and postactive stages.

The McLeod study can be criticized on the grounds that possibly excessive weight was placed on the stimulated recall interviews. These data could have been supplemented to good effect by observations and by having teachers think aloud during the preactive stages. Nevertheless, this research does much to broaden the concept of goals, objectives, or intended learning outcomes and their roles in planning and teaching. Earlier research tended to dismiss learning objectives as a rare, and therefore unimportant, element in teacher planning, even going so far as to characterize teachers as interested only in activities rather than in outcomes. McLeod's study suggests that teachers can and do think about an act to support both specific and general learning outcomes for their students, and that it is hazardous to study the process of teacher planning in isolation from interactive teaching and postactive reflection.

**Teacher Planning and Classroom Interaction**

The third and final question addressed in this review has to do with the link between teacher planning and action in the classroom. Studies mentioned earlier demonstrate that the content of instruction and the sequence of topics are influenced by teacher planning (e.g., Clark & Elmore, 1981; Smith & Sendelbach, 1979). Several other studies examine how what teachers planned to do influences what actually happens in the classroom.
Zahorik (1970) compared the effects of the presence and absence of structured planning on teachers' classroom behavior. He provided 6 of 12 teachers with a partial lesson plan containing behavioral objectives and a detailed outline of content to be covered two weeks hence. He requested that the remaining 6 teachers reserve an hour of instructional time to carry out a task for the researchers, not telling them that they were going to be asked to teach a lesson on credit cards until just before the appointed time. Zahorik analyzed recorded protocols of the 12 lessons focusing on "teacher behavior that is sensitive to students" (p. 144). He defined this behavior as "verbal acts of the teacher that permit, encourage, and develop pupils' ideas, thoughts, and actions" (p. 144). In comparing the protocols of the planners and non-planners, Zahorik judged that teachers who had been given plans in advance exhibited less honest or authentic use of the pupils' ideas during the lesson. He concluded from this that the typical planning model--goals, activities and their organization, and evaluation--resulted in insensitivity to pupils on the part of the teacher.

Unfortunately, Zahorik did not determine the degree to which the teachers who received the lesson plans in advance actually planned or elaborated the lesson. A competing explanation for these findings is that the teachers who had no advance warning about what they were to teach were forced by the demands of the task to concentrate on their students' ideas and experiences, while those teachers who knew the expected topic of instruction for two weeks prior to teaching were influenced to focus on the content rather than on their students.

Peterson, Marx, and Clark (1978) conducted a laboratory study of teacher planning, teaching, and student achievement. Twelve experienced junior high school teachers were given social studies materials dealing with life in a
small French community along with a list of desired cognitive and affective student learning objectives. The teachers were given a 90-minute period in which to think aloud while they planned a three-hour instructional unit. After planning, the teachers were videotaped while teaching groups of eight junior high school students. At the end of the teaching day, the teachers were interviewed using a stimulated recall process in which they viewed videotaped segments of their own teaching and responded to a series of questions about their thought processes while teaching. The students completed achievement tests and an attitude inventory immediately after class. Each teacher repeated this process on three separate days with three different groups of students.

A number of positive relationships between the focus of the teachers' planning statements and their classroom behavior emerged. For all teachers, planning on the first day of teaching was heavily weighted toward the content to be covered. However, the focus of their planning shifted on the second and third days, with planning for instructional processes becoming more prominent. The proportion of planning statements dealing with the learner was positively related to teacher behaviors classified as "group focused." The proportion of planning statements dealing with the content was positively and significantly correlated with teacher behavior coded as "subject matter focused." These findings suggest that teacher planning is most related to the general focus or tone of interactive teaching rather than to the specific details of verbal behavior. They also suggest that the nature of the work done during the pre-active planning period changes with situation-specific teaching experience. As the task demands on the teacher change, so does the nature of appropriate preparation.

Carnahan (1980) studied the planning and subsequent behavior of nine fifth-grade teachers who taught the same two-week mathematics unit. The
quality of the teachers' written plans was determined by rating plans that focused on large groups as low in quality and plans that focused on individuals or small groups as high in quality. (This criterion was chosen because the curriculum materials that the teachers were using incorporated a similar bias.) Classroom observers rated instruction for teacher clarity, use of motivation strategies, and student engagement. Carnahan found that no statistically significant relationship existed between his ratings of plan quality and the ratings of teaching quality. However, he did find a significant positive correlation between the total percentage of written planning statements about small groups or individuals and the teachers' observed use of small groups in the classroom. This and other findings in Carnahan's report indicated that the main relationship between written plans and subsequent classroom interaction is in the domain of organization and structuring of teaching rather than in the domain of specific verbal behavior. During interactive teaching, the responses of students are unpredictable and therefore verbal dialogue is not a profitable focus for teacher planning.

The influence of teacher planning on classroom processes in the teaching of preschool seems to be somewhat different from that observed in higher grades. Hill, Yinger, and Robbins (1981) studied the planning of six teachers who constituted the staff of a university developmental preschool. During a 10-week period the researchers observed the teachers' Friday afternoon group planning sessions, staff meetings, conferences with student teachers, materials selection from the storeroom, and their arranging of their classroom environments. They also interviewed the teachers about their planning processes and copied planning documents and records.

Hill, Yinger, and Robbins found that much of the teachers' planning centered around selecting and arranging manipulable materials. The school
storeroom was an important source of ideas for learning activities, and once the appropriate materials were identified, the planning process focused on how these materials were to be arranged in the classroom for use by the children, and on how the transitions into and out of these activities were to be managed. The teachers were observed to spend three or more hours per week arranging the physical environments of their classrooms. When an activity did not go well, the first improvement strategy used by these teachers was to rearrange the physical environment. Because teaching in this setting was so heavily dependent on the materials selected and arranged by the teachers, it is clear that the nature of the children's learning opportunities was heavily influenced by teacher planning. It is also clear that the nature of the planning process was influenced by the demands of teaching in this setting.

These studies, taken together, suggest that teacher planning does influence opportunity to learn, content coverage, grouping for instruction, and the general focus of classroom processes. They also highlight the fact that the finer details of classroom teaching (e.g., specific verbal behavior) are unpredictable and therefore not planned. Planning shapes the broad outlines of what is possible or likely to occur while teaching, and is used to manage transitions from one activity to another. But once interactive teaching begins, the teacher's plan moves to the background and interactive decision making becomes more important.

**Conclusions**

From what research on teacher planning reveals about the types and functions of planning, models of the process, and the connections between planning and teaching, I recommend five points as essential knowledge for beginning educators.
First, teacher planning is a large, important, demanding, and usually an invisible and solitary part of being a professional teacher. Yet there is not much institutional or collegial support for teacher planning.

Second, several different types of teacher planning must be engaged in during the school year. These types of planning are interdependent—nested within each other—and interactive. Teacher educators need to ask where and how these various kinds of teacher planning are addressed in teacher preparation programs.

Third, curriculum is inevitably transformed in the planning process by additions, deletions, misunderstandings, and so forth. The actual, taught curriculum is created largely via teacher planning. Educators need to begin thinking of curriculum as consisting of both published materials and the teacher's interpretation and enactment of them.

Fourth, there does not seem to be one best way to plan. Experienced teachers' planning has been described by a variety of models, and the model or style in use varies with the task, the time available, and other circumstances. In teacher preparation, perhaps these models or styles of planning could be used as heuristic, first approximations of how to plan, much as the Joyce and Weil (1972) models of teaching have been used. As prospective teachers gain experience they could be encouraged and assisted to develop approaches to planning that best fit their own situations.

Fifth, teacher planning reduces but does not eliminate uncertainty about how instruction will happen. Interactive teaching is a complex, volatile social process that includes surprises as a matter of course. I believe that it will help beginning educators to think of their plans as flexible frameworks for action, as devices for getting started in the right direction, and as something to depart from or elaborate on, rather than as rigid scripts.
The knowledge produced by research on teacher planning consists of three closely interrelated parts: (1) information about what teacher thinking consists of, the forms that it takes, the functions that it performs, and the range of individual differences in teacher thinking; (2) language of verbal labels for concepts and phenomena important in teacher thinking that can be used to communicate about this "invisible world;" and (3) methods of inquiry for describing, analyzing, and understanding the mental lives of teachers that were originally developed as research tools but that also hold great promise as means for teacher education and professional development.

Together, I believe that the information, language, and methods of inquiry developed through research on teacher planning can be integrated into existing programs of teacher preparation and professional development. The aim is not to overthrow or supplant what is, but to provide the tools for a more complete understanding of why schooling is as it is and a more adequate foundation for planned change.
References


