

---

**Education**

---

11-1995

## Two Beginning Kindergarten Teachers Planning for Integrated Literacy Instruction

Kathleen A. Roskos

*John Carroll University*, [roskos@jcu.edu](mailto:roskos@jcu.edu)

Susan B. Neuman

Follow this and additional works at: <https://collected.jcu.edu/educ-facpub>



Part of the [Education Commons](#)

---

### Recommended Citation

Roskos, Kathleen A. and Neuman, Susan B., "Two Beginning Kindergarten Teachers Planning for Integrated Literacy Instruction" (1995). *Education*. 2.

<https://collected.jcu.edu/educ-facpub/2>

This Article is brought to you for free and open access by Carroll Collected. It has been accepted for inclusion in Education by an authorized administrator of Carroll Collected. For more information, please contact [mchercourt@jcu.edu](mailto:mchercourt@jcu.edu).

# Two Beginning Kindergarten Teachers' Planning for Integrated Literacy Instruction

Kathleen Roskos

*John Carroll University*

Susan B. Neuman

*Temple University*

## Abstract

This study reports the characteristics and strategies of 2 beginning kindergarten teachers' planning for an integrated approach to literacy instruction. Using ethnographic observational and analytic techniques, we describe features and structures of integrated instruction as a planning "problem." The teachers' problem-solving strategies under the conditions of this task are also examined. Results revealed the multiple and complex nature of integrated instruction as a planning problem. Based on domain and componential analyses, the task appeared to include at least 6 kinds of planning activity and to make multiple demands on the planners' time, specificity of planning, level of pedagogical knowledge, and degree of work. Further analysis indicated a recurring pattern in the teachers' organization of their activities, suggesting a 4-phase planning model. An examination of the teachers' verbal accounts for indicators of mental processes used in their problem solving indicated strategies of the forward-search and problem-reduction type, with the former predominating. Features and structures of integrated instructional planning as a problem type are summarized from the teachers' perspective as novices. We also discuss possible implications for teacher preparation and development and areas for further research.

Making and carrying out instructional plans are the very "stuff" of teaching. As a complex conglomerate of pedagogical thinking and doing, the planning teachers do and carry out is what distinguishes their work as professional activity. Yet for all its presence and importance in teaching, planning as a pedagogical activity is not well understood. Barring good advice, it is far from clear how to prepare someone to plan "like a teacher" or to advance one's ability in this regard (Borko, Livingston, & Shavelson, 1990; Yinger, 1986).

Understanding the nature of teachers' planning processes, however, presents special methodological challenges. This is true not only because planning is a psychological process only indirectly observable, but also because it is a practical activity that teachers rarely document in detail (Clark, 1983). Nevertheless, despite investigatory obstacles, a growing body of descriptive research has begun to reveal the complexity of teachers' planning processes.

Researchers working from a cognitive psychology perspective, for example, describe the "nested" nature of teachers' planning, where daily plans seem embedded in much larger images of classroom activity (Morine-Dershimer, 1979). These images represent operational plans or "agendas" for lessons that reflect teachers' schemata or pedagogical knowledge (Leinhardt & Greeno, 1986). From this perspective, then, teaching is a complex cognitive skill that relies on pedagogical reasoning to transform content into forms adaptive to students' interests and needs (Shulman, 1987, p. 15).

Others, assuming a phenomenological perspective, suggest that teachers' planning most closely resembles a design process rather than one of rational choice, as proposed by Tyler (1950) some time ago. Most clearly described in Yinger's (1977, 1979) work, the design-process view argues that planning is essentially a problem-solving activity characterized by three stages: problem finding; problem formulation and solution, which produce a plan; and, finally, plan implementation and routinization. Improvisational performance provides an apt metaphor for teaching from this perspective, since teachers are seen, like performers, to draw on a repertoire of teaching routines yet to remain responsive to the dynamics of classroom instruction and students' unique needs. Hence, planning in this sense is much less detailed, calling only for guidelines that accommodate the unpredictability of classroom teaching.

Collectively these studies indicate that teachers' planning is cyclic, recursive, and cumulative, characterized more by flexible adaptation throughout instruction than the systematic application of technical skills at prescribed points in time (Clark, 1983; McCutcheon, 1980; Morine-Dershimer, 1979; Peterson, Marx, & Clark, 1978). Moreover, they have produced new theoretical models of planning that appear to reflect more closely the functional realities of teaching and to raise the topic of instructional planning beyond the level of prescriptive advice.

As it stands, however, this body of work has two drawbacks. One of these is a lack of descriptive information of novices' planning processes from which to construct a developmental perspective (Borko & Livingston, 1989). This may be due in part to deeper problems associated with retrospective and self-reporting that affect accounts of planning. For example, in retrospective reporting there is the ever-present problem that what is said is not what was actually done, since there is the tendency to reorganize one's thoughts for oral presentation (Neisser, 1968). This may produce more linear descriptions of planning than actually occurred. Likewise, forms of self-reporting are problematic, especially with respect to experienced teachers whose planning processes have become highly automated and therefore less retrievable (Ericsson & Simon, 1980). In their accounts, experienced teachers tend to omit essential planning steps, providing highly condensed versions of planning. Consequently, since most research on instructional planning processes has been conducted with experienced and highly successful elementary teachers, it falls short of providing a comprehensive view of instructional planning.

Yet another and perhaps greater drawback of the instructional planning research is the degree to which it is predicated on traditional instructional approaches in elementary schools. Most studies have focused on single planning episodes where models

of direct instruction prevail (Clark & Peterson, 1986). In light of current reformist pedagogy based on constructivist views of teaching and learning, however, this is a serious limitation. Planning for learning as an active process of constructing and producing knowledge, where the teacher acts as a guide to inquiry, places significantly different demands on teachers' thinking and planning than traditional telling and showing. If teaching reforms anchored in the constructivist orientation are to become part and parcel of teachers' professional knowledge, then processes of planning for instruction that correspond to this view need to be developed and nurtured as "habits of mind."

In light of this, we selected teacher planning as an important topic of inquiry in the context of a larger investigation wherein we observed the implementation of a curriculum change in the kindergarten classrooms of two beginning teachers. Our overarching aim in this investigation was to observe the effects on teaching and learning of a different way to organize the curriculum for purposes of greater integration of literacy processes with content learning. Specific to teacher planning, we sought to describe how our broader goal of curricular change affected this essential professional task, particularly what characterized it as a task and how the teachers handled it. We asked two questions in this study: (1) What characterizes beginning teachers' planning for an integrated approach to literacy instruction over a long period of time? (2) What strategies emerge that describe the problem-solving processes teachers use with this planning task? Since our goal was to describe characteristics of the teachers' planning as well as their thinking, we followed a line of inquiry referred to as the ethnography of problem solving in which verbal accounts are proposed as explanations of problem-solving types and processes (DeGroot, 1966). A multimethod approach to the systematic description of problem solving in naturalistic settings is used to dis-

cover features and structures of problem-solving tasks and related strategies, thus providing the foundations for the development of problem-solving models (Shulman & Elstein, 1975; Yinger, 1986).

## Method

### Participants and Setting

Two female teachers who were in their first year of kindergarten teaching participated in the study. Both were about 22 years old and were recent graduates from nearby private colleges where they had majored in elementary education and taken additional coursework in early childhood education to obtain kindergarten endorsements on their teaching certificates.

They taught kindergarten in the same school in classrooms adjacent to one another. Soft spoken and subdued, Susan approached the teaching of young children in an orderly and thoughtful way, tending to use stimulating activities to hold her students' attention. More outgoing and dramatic, Monica preferred to be center stage, engaging students' attention through her demonstration, tone of voice, and gesture; she tended to use a variety of art and craft activities along with required curricular materials to enliven children's learning.

For the most part, the teachers' classrooms resembled typical kindergarten instructional settings, with areas for whole-group instruction and smaller spaces for play activities and/or learning centers. Their rooms were comparable in size and outfitted with similar physical and material resources.

The kindergarten program was organized into half-day sessions, each approximately 2½ hours in duration, with an average of 23 children (87% Caucasian; 12% African American; remaining 1% Russian and Chinese) from low- to middle-income homes attending each session. This block of time was organized similarly by the two teachers and typified common kindergarten schedules: greeting, calendar, reading/writing activities, free choice, math activities,

seasonal activities, departure. Commercially prepared materials constituted the overall curriculum, including the Alpha Time Program for beginning reading instruction (Weimann & Friedman, 1988) and the Mathematics Plus Program (Harcourt Brace, Jovanovich, 1992). Units were used to introduce social studies and science concepts, for example, the five senses, shapes, and colors. These were treated separately from reading and math instruction.

### The Integrated Approach to Literacy Instruction

Drawing from our earlier work, we developed an approach to beginning literacy instruction that emphasized writing and reading as learning processes rather than discrete curricular subjects (Neuman & Roskos, 1993). Translated into practice, this meant the interweaving of literacy instruction into content areas that were likewise presented in an integrated way. The approach was constructed around four basic principles.

1. As processes for acquiring and expressing knowledge, literacy instruction should focus on topics of interest and relevance to young children (Moffett, 1968). The approach, therefore, was *topic-centered*, emphasizing language and literacy as tools for learning information useful in and out of school.

2. Knowledge develops as a result of cumulative and connected learning experiences that reveal important relationships and patterns. Thus, our approach encouraged the organization of instruction around a *limited set of ideas* that developed young children's knowledge, processes, and dispositions in relation to a topic of study of intellectual worth (Katz & Chard, 1989).

3. Given the value of social interaction in the construction of knowledge, young children need many opportunities to work together and with adults in joint problem-solving activity (Rogoff, 1990; Wertsch, 1986). Acknowledging the benefits of social interaction, the approach emphasized

*small-group and shared activity* where literacy processes were demonstrated, guided, and used to solve problems and complete tasks.

4. Practical activity that allows young learners to tackle directly what is to be learned has long been viewed as contributory to their learning (Dewey, 1957). Building on this, the approach emphasized "*learning by doing*" rather than "learning in order to do." Through concrete and self-directed activity, young children were provided many opportunities to experience important ideas firsthand and on their own terms.

The application of these principles to instructional planning consisted of a two-stage process: (1) planning focused on the selection and implementation of topics that appealed to children's interests and developed their knowledge, language processes, and dispositions toward learning; and (2) restructuring the order of daily instruction. Briefly, this approach called for teachers to select topics of study that were not only of interest to young children but also content rich such that children could develop a body of knowledge through the course of their inquiry. In planning for the students' engagement with the topic, teachers needed to construct a framework of knowledge, processes, and dispositions to be developed through a series of whole-class and small-group interactive activities that were integrated, progressive, and cumulative in nature. Instruction in writing and reading was embedded within these activities and thus was taught as one means of gaining and producing knowledge about the topic. As the example in Figure 1 illustrates, the planning goal was to design a coherent set of learning experiences that allowed for the full integration of the curriculum and the teaching of literacy in situations of meaningful use. Implementation of the topic study was organized around a daily sequence for instruction as outlined in Appendix A.

**A Topic Study of Seeds** (Neuman & Roskos, 1993, p. 162)

Learning Activities

- o Observe miniature gardens & sktech (pencil)
- o Share pen/ink skteches of flora by famous artists
- o Read literature to answer questions
- o Make seed candy & record recipes (Harlan, 1988)
- o Put recipes in Big Book of Recipes
- o Complete Big Book of children's version of The Tiny Seed
- o Observe domes & record observations; Make log
- o Decide culminating activity

Learning Activities

- o Collect, observe, & sort assorted seeds.
- o Sprout seeds in domes + record observations (Pace, 1990)
- o Make Silly Bird Seed Gardens (Allison, 1975)
- o Make translucent window hangings with seeds
- o Invite children's ideas and questions & record on K-W-L chart
- o Language experience story about local planting activities
- o Watch film *Growing, Growing*

Knowledge

- (1) There are different kinds of seeds.
- (2) Seeds grow into plants with roots, stems & leaves
- (3) Seeds need certain conditions to grow.
- (4) Some seeds are good food.
- (5) Seeds and plants need care from people

Processes

- (1) Using language to obtain/share information
- (2) Discovering meanings of words/sentences
- (3) Recording experiences using drawing & writing
- (4) Following oral and written directions
- (5) Developing concepts of print-meaning associations

Dispositions

- (1) Responding with care for the environment
- (2) Willingness to observe, compare & record
- (3) Willingness to wait
- (4) Enjoying the use of one's senses

Learning Activities

- o Share poems & literature
- o Make music with seeds (Harlan, 1988)
- o Record observations of seeds in domes. Begin to collect into a log.
- o Continue to explore seeds in small group activity time
- o Germination experiment #2 - Mixed Up Seeds
- o Illustrate new version of The Tiny Seed

Learning Activities

- o Read literature to answer questions
- o Rewrite text of The Tiny Seed
- o Make miniature gardens
- o Experiment #1 (Harlan, 1988, p. 47)
- o Count # of seeds & vegetables; make chart
- o Seed picture with edible seeds

FIG. 1.—Example of integrated literacy instructional plan

A modification of Cambourne's (1988) classroom organization, this daily routine allowed for whole-class, small-group, and students' independent interactions with content, materials, and peers. Thus, participation structures rather than discrete subjects guided the teachers' instructional design of activities and their respective settings. For example, in teaching curricular content and literacy processes relevant to a topic study of winter, the teacher might describe during whole-group focus time how snow forms and subsequently engage students with this information by using a number of other participation structures, such as small-group and independent problem-solving activities. In the course of these experiences, children are exposed to important curricular knowledge, processes, and dispositions many times and in a variety of ways, in contrast to the more singularly focused approach characteristic of traditional kindergarten instruction, for example, learning letters through the Alpha Time Program.

### Procedures

Over a 2-week period, we met with both teachers for approximately 8 hours to acquaint them with the integrated approach. We held four sessions. At first, we described the approach and provided examples, then discussed the teachers' reactions and concerns. We also provided the teachers with background reading for additional information about integrated instruction. At sessions 2 and 3, we further detailed the approach and examined more specifically what this alternative might mean for their planning and instruction. At the fourth session, we addressed remaining questions, continued to clarify the approach, and outlined our ongoing relationship with them as they shifted from their traditional approach to the alternative.

Following this, we assisted the teachers in developing a pilot topic study, entitled the Healthy Me. Meeting together after school weekly over a 6-week period, we guided teachers through their first practical application of the approach and facilitated

its implementation in the classroom. Two weeks were spent in planning the topic study and 4 weeks for implementation. At this time we addressed curricular issues, re-emphasized key concepts of the approach, and negotiated practical concerns as they arose.

We then asked the teachers to apply the integrated approach to literacy instruction on their own and to engage in joint planning sessions, in other words, to plan "out loud" at least once a week in our presence. We used several procedures over a 4-month period (December–April) to observe the teachers' planning. As a participant observer, one of the researchers recorded field notes of all planning meetings (2–3 hours in length) for a total of 14 entries, representing detailed accounts of the teachers' planning activity.

Second, we videotaped enactments of the instructional plans, beginning with videorecordings of specific instructional segments, such as small-group activity time, in the early months of the study and gradually progressing to videorecordings of entire daily sessions for the last 2 weeks of the study. Two excerpts each from the beginning, middle, and end of the time period were selected for viewing by the teachers and for assessing fidelity to the approach.

Third, the teachers individually participated in periodic video reviews where each viewed a videotaped instructional segment from her classroom with the researcher. Following the viewing, the teacher was asked to (1) describe the instructional scene, (2) give her interpretation of it vis-à-vis the integrated approach, and (3) indicate what it meant for her future planning efforts. Each teacher's comments were audiotaped and transcribed from three video reviews representing three different points in the study.

Finally, each teacher participated in a series of five ethnographic interviews conducted by the researcher, who had assumed the role of participant observer. Each interview lasted approximately 45 minutes and

followed the same format, which consisted of a broad question about the teacher's planning with follow-up structural and contrast questions for descriptive detail (Spradley, 1979). All interviews were audiotaped and transcribed.

### Data Analysis

Analytic techniques for examining the ethnographic record were drawn from research in the process-tracing tradition, especially that conducted in an ethnographic style (DeGroot, 1966). The aim of this research is to systematically observe processes of thinking and judgment in settings that resemble actual task environments to the extent possible. This research argues for an information-processing approach that considers the task itself as an important determinant of problem-solving behavior in relation to planning. From this position, individuals adapt to the problem situation, and how they plan reveals as much about the features and structures of the task or problem as it does about the planners as problem solvers (Newell & Simon, 1972). Thus, the integrated approach provided a problem situation or "problem space" for the teachers that allowed us to observe their problem-solving behavior under these conditions. How they planned in this problem space provides important descriptive information pertaining to integrated instruction as a problem type and to the strategies these novices employed to solve this problem type.

### Determining Characteristics of the Planning

Following Spradley (1979, 1980), we used domain analysis to identify task characteristics of the teachers' planning. We defined planning as "a course of action to achieve a desired goal" (Covington, 1987). In particular, we were interested in kinds of planning activity and their general attributes. Using the semantic relationship of X is a kind of Y, we first located the teachers' verbal descriptions of planning, defined as

acts and indicated by verb phrases, in two sources from the ethnographic record: field notes and interviews. In brief, this process consisted of finding and marking all verb phrases indicative of planning acts (e.g., "*We brainstormed topics*" or "*We decided to rearrange the classroom*").

Next we made a list of verb phrases, representing the unduplicated count, as indicators of planning acts. We then read and reread this list to ascertain sets of related planning acts that represented a kind of planning activity. These sets were then sorted into categories and assigned a cover term characterizing a specific kind of planning activity.

Finally, a componential analysis (Spradley, 1979) was conducted to further determine attributes of the planning and to differentiate activities from one another. For this research we used a structural reality approach to componential analysis that allowed us to assign attributes to the domain of integrated instructional planning and its member activities based on our observations of the teachers' planning activities and previous teacher planning research.

To obtain a structural description of planning, verbal action plans of the teachers' planning activities were developed and analyzed, drawing on the domain analyses (Werner & Schoepfle, 1987). As ethnographic tools, verbal action plans are used to discover recurrent patterns of behavior indicative of the sequential organization and systematization of activity. They are diagrammed in such a way as to demonstrate the notion of sequence and strategy, including a definite starting point and ending point of an activity as well as the hierarchy of specific action segments as indicated by verb phrases.

#### Determining Teachers' Planning Strategies

To ascertain the teachers' planning strategies, we examined their verbal statements for evidence of the mental processes they were using to solve problems under the

conditions of integrated instruction. We confined this analysis to the interview data and adapted a coding system drawn from the information-processing work of Swanson, O'Connor, and Cooney (1990), which describes 24 mental components that function as planning processes. Individuals' statements as to their problem-solving behavior are coded for each component's presence. For example, a teacher might say, "First thing we would look at is the topic." This would be coded as the mental component of "assigning priorities," indicating the mental activity of choosing a preferred action, decision, or idea. Mental components may then be grouped into heuristic and strategy routines that reveal an individual's patterns of thinking in problematic situations.

Applying this analytic approach to the interview data, we limited our search to nine mental components commonly occurring in strategic planning processes: evaluating the situation, prioritizing planning, predicting and confirming possibilities, identifying and selecting procedures, defining problems, noting patterns or rules, and organizing to plan (see Table 1 for a fuller description of these components). After establishing intercoder reliability (92%), we followed a two-step coding procedure that included: (1) numbering each statement in three of each teacher's interview transcripts (we used the last three interview transcriptions, since these reflected the teachers' greater familiarity with planning for integrated literacy instruction using our approach), and (2) coding each statement for the presence of one or more mental components. These data were then content-analyzed for emerging strategies, defined as patterns of decisions "in the acquisition, retention and utilization of information that serve to meet certain objectives" (Bruner, Goodnow, & Austin, 1956, p. 54).

## Results

### Characteristics of the Planning

As illustrated in Figure 2, two characteristics identified the teachers' planning for



TABLE 1. Coding System for Identifying Mental Components in Teachers' Descriptions of Their Planning

Mental Component (Code)	Description	Example
1. Evaluating (EV)	Assessing data related to the task (e.g., time or curriculum) or dimensions of the task (e.g., difficulty, "do-ability," appropriateness)	"Sometimes it's difficult to find certain activities in certain areas such as math or science."
2. Prioritizing (PR)	Choosing a preferred action, decision, or idea about what to do first, next, and so on	"First thing we would look at is the topic."
3. Formulating hypotheses (PRDT)	Making predictions with relevant data and information	"If some of the children went to preschool and might already know some things or have experienced some things."
4. Confirming (CF)	Describing what is expected based on cues; an expected outcome	"Then we would need to change what we teach. We would have them [the students] do more with measuring using rulers."
5. Identifying (ID)	Naming or outlining possible procedures or operations	"We could use a shared book technique to teach information about polar bears."
6. Selecting (S)	Making a decision as to what will be done	"We will have a math and science play setting for practicing measuring."
7. Defining (DF)	Representing the problem or task, including goals, resources, constraints	"You need to focus on what you want the children to come to know, not a bunch of activities they can do."
8. Noting patterns (R)	Searching for regularities and relationships in the data or situation	"Being specific is really important when planning for what children will do in the play settings. It needs to be challenging and not too easy."
9. Organizing (OR)	Defining general planning strategies, e.g., noting constraints and desirable features in the developing plan or evaluating the planning process itself	"We need to ask ourselves if what we are planning actually helps the kids learn the beginning reading skills they need."

an integrated approach to literacy instruction. These are briefly described below.

***Multiple kinds of planning activity.***

Although the teachers used the term "planning" generically to describe what they

were doing, they actually engaged in several kinds of planning activity to achieve their goal of integrated instruction. Based on a collection of 225 planning acts representing 1,245 verb phrases used to describe

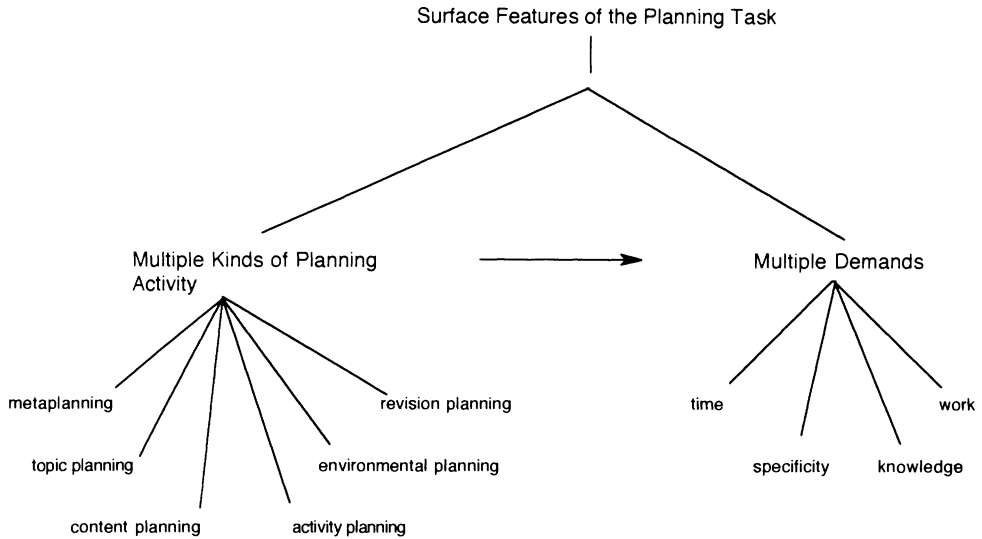


FIG. 2.—Surface features of the planning task

planning behavior, six kinds of planning activity emerged from the ethnographic record: metapanning, topic planning, content planning, activity planning, environmental planning, and revision planning (see App. B). These six planning activities emerged toward the beginning of the teachers' attempts to construct integrated literacy learning experiences and became increasingly more stable as the teachers worked together over the 4-month period.

As a planning activity, metapanning was an attempt to "plan the plan." It was characterized by concerns for personal time and commitment to the task, with relatively little emphasis on instructional specifics. In many ways metapanning resembled a kind of ongoing feasibility study where the feasibility of integrated instruction was frequently assessed and potential actions considered. Relatively unaware that they even engaged in this sort of planning activity, the teachers referred to it as "getting organized" or "getting started," which sometimes meant deciding whether or not to proceed with the overall endeavor and other times how to proceed so as to get the work of planning done. At various times in the

teachers' work, metapanning consumed entire planning sessions.

Topic and content planning activities, in contrast, focused almost exclusively on instructional time, that is, how long to spend on a topic and how to present it across several weeks. Both activities drew heavily on the teachers' familiarity with existing curricula as well as their own pedagogic and content knowledge. Selecting a topic seemed easier than deciding on content to be taught. As Susan stated, "That goes rather smoothly . . . picking a topic, developing background, knowing your curriculum and objectives, thinking about the reading and writing you might teach. What's so hard, though, is to stay on what you want children to know, because it's so easy to think of all those different activities kids could do. But to stay on knowledge you really want them to acquire so that they can internalize what they're experiencing. That's darn tough." Together, topic and content planning involved outlining what would be taught, approximately when and where, and to what extent considering the students' abilities and interests. In one sense, these planning activities produced a blueprint that provided the specifications

for instruction geared to the particular idiosyncrasies of each teacher's situation and her students as she understood them.

Of the six activity types, activity and environmental planning activities, however, dominated the teachers' actual planning time—an observation consistent with much of the research on teacher planning (Clark & Peterson, 1986; Yinger, 1986). Planning activities such as making connections between topic, content, and activity; assuring that learning experiences are interesting and challenging to students; finding the right resources; envisioning the flow of instruction so it is coherent; and physically preparing the environment drew on the teachers' ability to design instruction to meet the conditions of topic, content, students' development and interests, time, space, and resources. However, as beginners, the teachers' design skills seemed limited by their lack of awareness of relevant information, their limited knowledge of the task, and their inability to control and use their own knowing. As a result, they spent considerable time making activity and environmental plans that were often to no avail because they were impractical, unsuitable for young children, or too unrelated to the topic study. Susan more often than Monica tended to recognize this in her own plan making: "Sometimes we just make up activities and don't think about their connection to the topic. They're good activities but we spend so much time on them, how they might work, and all that, but they're not related to the topic. So why do we do that?"

Nevertheless, the teachers often expressed their preference for these kinds of planning activities, perhaps due to their hands-on qualities and their direct applicability to daily classroom life. Of the two, activity planning seemed the more challenging, especially as it pertained to the development of the small-group activities that were an essential element in the alternative approach. These, in particular, presented the teachers with a special design problem

in that such activities needed to be linked substantively to the topic study yet appropriate to the children's level of self-direction. For example, in their topic study of winter, the teachers grappled with how to set up experiments related to changes in states of matter that their young students could explore on their own. Following a number of like experiences, Monica observed, "I think it's one of the toughest things we've ever done, tackled the small-group activity challenge. And in the beginning we really had a rough time. But we learned a lot. I think we've come a long way with this."

Environmental planning, though, was a favorite. According to Monica, "You have to plan your environment to go along with integrated instruction. I really enjoy this. It's fun. You have to decide on centers, where you want them to be, where you want the kids to go, and procedural stuff. You have to get all the little things you need. And then you get to set it all up and watch what the kids do with it." Such planning included drawing floor plans, staying after school and rearranging classrooms, going on shopping trips together, and sharing material resources and ideas. For both teachers, it was perhaps the most relaxing and social aspect of their planning. In general, then, activity and environmental planning seemed to produce images of potential instruction-in-action. They aided the teachers in creating mental pictures of what might actually happen when they implemented their instructional plans.

Whereas activity and environmental planning focused on imagining the flow of instructional events in the classroom, activity surrounding revision planning entailed looking back at one's plan making to assess its efficacy and reasonableness with respect to time, instructional purpose, and resources. As Susan said, "You have to look back. You need to continually evaluate what you're doing and how it's fitting in with everything . . . what you could add, what you might want to take away . . .

you're constantly reevaluating so it all might work." Thus, the distancing and re-focusing that characterized revision planning seemed to solidify the teachers' plan making and to move it toward eventual enactment.

In sum, although the teachers might say that they were planning integrated literacy instruction as though this were a singular activity, they actually engaged in multiple kinds of planning to accomplish their goal. They appeared to construct a series of plans that were tightly interwoven, giving the impression of a plan. The teachers also seemed to prefer some kinds of planning activity (e.g., environmental planning) over others or spent more time on some kinds (e.g., activity planning), which may have influenced the overall quality of instructional planning for integrated literacy. In addition, some of the planning activities appeared to challenge the teachers' planning skills more than others. Activity and environmental planning, for example, seemed more dependent on the teachers' alertness to relevant environmental cues (e.g., children's capabilities and developmental needs) as well as their own knowledge of what might or might not work.

**Multiple demands.** Additional features of the planning surfaced in relation to its multiple demands on the planners. Based on the componential analysis of the teachers' planning activities, these appeared to cluster around the broader features of time, specificity, knowledge, and work as indicated in Appendix C.

*Demand for time*, for example, was a task feature that concerned the teachers both personally and instructionally. Personally, they found planning for integrated instruction to be time-consuming. Although initially this may have been due partially to their unfamiliarity with the alternative approach, the demand for large blocks of planning time outside the school day persisted throughout the study. It was not uncommon for the two to devote whole evenings to planning for integrated instruction.

Instructionally, the planning task appeared to put the teachers into a position of forecasting instruction into the future to a greater extent than they had done under their traditional approach. As Monica described, "I think that when I planned [before] it was just planning for that day . . . you know, day-to-day planning. This [integrative teaching] takes a lot more [time for] planning in the beginning [prior to instruction], because you plan in detail for 3 or 4 weeks."

To forecast instruction, the two teachers engaged in a process they referred to as "breaking down" instruction, which meant laying it out across units of time (e.g., monthly, weekly, and daily). The most concrete example of this was in the format and content of their daily lesson plans. Not only did these shift from single-word descriptors in small boxes on one page to multiword descriptions across several pages of the typical instructional plan book, lesson plans also began to include small sketches of "set-ups" for small-group activities (e.g., experiments or art projects).

As a feature, *demand for specificity* was related to the degree of explicitness and exactness needed to make plans. Susan stated, "You have to think of learning goals at many levels, not just the whole-group lesson, and you have to look at these in different ways and from different perspectives, like the child's, not just one, the teacher's. So you have to really get down and get into specific aspects and make them all come together . . . make them coincide."

This need for specificity seemed to challenge the teachers' abilities to size up the instructional situation and to bring relevant information to bear on the planning task. As Monica related, "I think the way I plan has changed a lot. Now I feel there's so much more involved that sometimes it gets confusing. You have to consider a larger context, and it isn't just one tiny thing, like the letter 'T' or something. You have to think about what knowledge you're trying to develop and how writing, reading, and

books can fit into that—can enhance it and help kids make sense of the information. I guess my planning is a whole lot different now, and I have to include a greater variety of things.”

*Demand for knowledge* featured multiple knowledge sources; however, pedagogical content knowledge seemed especially crucial (Shulman, 1986). Defined as ways of representing and formulating subject matter so as to make it comprehensible to others, pedagogical content knowledge calls for high levels of pedagogical reasoning. To integrate literacy instruction with content learning goals through a topic study, these teachers had to (1) understand and interpret subject matter, (2) find ways to represent it to their students, (3) adapt it to the abilities and needs of young children, and (4) tailor subject matter to their own classrooms (Cochran, DeRuiter, & King, 1993). By their own admission, this level of pedagogical thinking challenged what they knew about teaching. Susan remarked, “What probably is the point of difficulty is the ‘knitting,’ you know, connecting it all together [topic, content, activity, interests]. You have to have another person to talk with, I think, to share information and to put your ideas together. What really helps is another brainstorming person in there who is knowledgeable about education and knows a lot. Especially someone who is not a beginner. I mean that is such a help. But then you have to do it . . . get in there by yourself and do it.” Repeatedly the teachers referred to the value of collaboration as an important part of their planning. “I think that is the thing that helps the most,” Monica claimed. “If I sat and tried to do this on my own, I think I’d get very frustrated . . . I mean just the different experiences each of us brings . . . makes such a big difference.”

*Demand for work* across the planning types brought structure and purpose to the planning task and provided the foundation for the development of planning routines. Described as the “sine qua non of classroom teaching” (Kagan, 1992, p. 160), routines

are mechanisms used to establish and regulate activities and to simplify planning (Yinger, 1979). For these teachers, as the work related to each planning activity began to “jell,” routines began to emerge that sequenced and systematized their planning work. These routines appeared to cluster around the following work goals that functioned as signposts for the different kinds of planning activity and signaled that work was actually getting done: (1) obtain a sense of the whole endeavor (metaplaning), (2) name the instruction (topic planning), (3) frame the instruction (content planning), (4) strategize instruction (activity planning), (5) situate instruction in time and space (environmental planning), and (6) reflect on plans (revision planning).

To summarize these results, two characteristics distinguished the teachers’ planning for integrated literacy instruction from more traditional forms of instructional planning: (1) the presence of multiple planning types embedded in the task, and (2) the multiple demands planning appeared to make on planners in terms of time, specificity, knowledge, and work. Each of these, in turn, produced additional features of the task, such as forecasting instruction and instructional design, that suggested a unique and complex planning problem.

In the second phase of our analysis, we examined the overall organization of the teachers’ planning. For this analysis we viewed the planning activities as planning structures and examined their relations to one another. Through a process of ordering and reordering the sequence of verbal actions plans, based on the teachers’ descriptions and our own inferences, we developed a working model of the overall organization of the planning task (see Fig. 3).

*Getting organized* reflected metaplaning activity. Centering on the feasibility of the planning effort in both professional and personal contexts, the teachers seemed repeatedly to ask themselves two questions: Is this possible in my situation? and, Can I do it? Responses to these questions either

## Organization of Planning Task

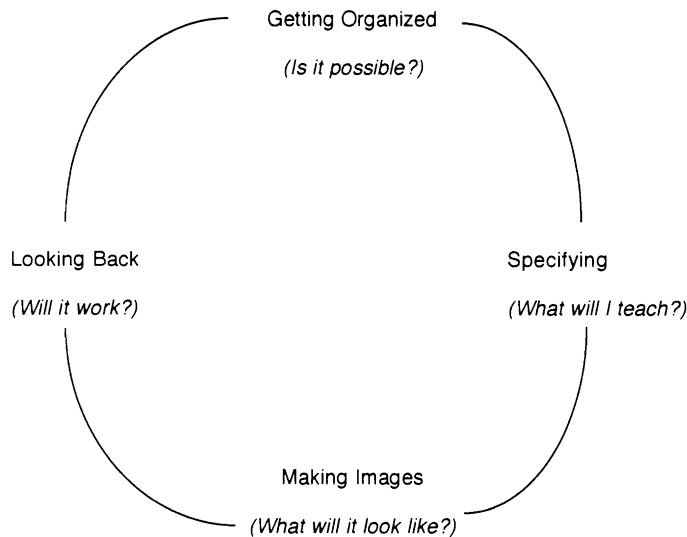


FIG. 3.—Organization of planning activity

enhanced or threatened their efforts to plan. For example, the administrative constraint of having to use the Alpha Time Program as prescribed presented a persistent stumbling block to the teachers' plans for integrated literacy instruction and instilled doubt as to the feasibility of the alternative approach in their classrooms. In short, they could not readily anticipate how they might incorporate this requirement into their plan for integrated literacy instruction, which compounded their difficulty in defining exactly what it was they were trying to do, that is, to integrate instruction. As a result, they felt disorganized, which frustrated and at times forestalled their plan making. In contrast, planning together and having someone else to talk to about plans seemed to enhance getting organized and to offset some of the feasibility and self-efficacy issues that pervaded this phase of activity.

*Specifying* encompassed topic and content planning activities. During this organizational phase, the teachers charted their instruction through a series of moves that considered timing, topic selection, and con-

tent in relation to the teachers' situation. In short, they began to shape instruction to meet the specifications of their instructional environments. This appeared to engage the teachers in forecasting instruction and in using their pedagogic content knowledge to think more explicitly about their instruction from multiple perspectives (e.g., the curriculum, the students, and their own knowledge). As a phase of activity, specifying seemed guided by the question, What exactly will I teach to these students in this classroom?

*Making images* involved activity and environmental planning, largely in response to the question, What might this look like in my classroom? At this stage of organization the focus of the teachers' activity seemed to be on creating mental scripts and pictures of their instruction and on envisioning how it might "go" in the classroom. This phase of planning also seemed to test the teachers' design abilities as they attended to and manipulated instructional and environmental variables in an attempt to create a coherent and satisfying picture

of what might occur. Given the proximity of activity and environmental planning to the realities of classroom instruction, making images of instruction tended to be a powerful presence in the teachers' organization of the planning task. In fact, imaging sometimes predominated the planning task, leading to fragmentation rather than integration. Susan described how easily this occurred in the course of their planning: "Sometimes I think when you come up with a topic, it's so easy to think about a ton of things, a million activities to do . . . that's what happened when we did the bird study. There was just so much information and so many things we could do. We just got involved with too many activities and it ended up a little bit here, a little bit there. There was no researching, just doing things . . . just doing activities. It didn't have any substance to it."

*Looking back* characterized revision planning and seemed to encourage the remaking of scripts and images as needed so as to proceed with activity. Organizationally, looking back appeared to provide the teachers with a way to review their planning and adjust it. In addition, it may have offered another opportunity to try out plans free from some of the impediments of actual instruction. In general, looking back occurred in response to the question, Will it work? which prompted the teachers to adjust and reinterpret their plans in accordance with their unique classroom situations.

Overall, the organization of the planning structures suggests a dynamic and recursive model of the teachers' planning activity consistent with newer models of instructional planning as adaptive activity (Clark & Peterson, 1986; Yinger, 1986). That is, the teachers tended to organize their planning for integrated literacy instruction in ways similar to that observed in other forms of instructional planning (e.g., single-lesson and single-subject unit plans).

#### Teachers' Planning Strategies

Our final analysis involved searching for patterns in the teachers' thinking that might

reflect the strategies they employed as ways to solve the planning problem. Based on an analysis of mental components identified in a total of 603 statements, four strategies emerged as means the teachers used to execute and monitor their making of integrated instructional plans. Table 2 summarizes these results.

The most prevalent strategy was *considering the whole situation* and *outlining actions* to be taken. In their attempts to gain and maintain control of the planning problem, the teachers simultaneously considered its multiple relations (evaluating component) and immediately prioritized their action steps (prioritizing component). Since the planning task included at least six kinds of planning problems (topic, content, etc.), this called for considerable persistence on the teachers' part. Nevertheless, the strategy allowed them to formulate solutions rather quickly, thus satisfying their strong need "to know what to do." However, the strategy's advantage of speed may have been at the expense of "qualitative completeness" (Swanson et al., 1990). Although the teachers produced plans in a relatively short time, the plans tended to lack accuracy, detail, and coherence, which only required that they spend additional time and

TABLE 2. Clusters of Mental Components and Frequency of Citation by Teachers as Planning Strategies

Strategy Type and Mental Components	Frequency in 603 Teacher Statements
Consider/list:	
Evaluating the whole situation	112
Prioritizing action steps	25
Search/select:	
Identifying procedures	67
Selecting procedures	62
Predict/check:	
Generating hypotheses	31
Confirming with relevant cues and criteria	11
Define/organize:	
Defining the problem	18
Detecting patterns	7
Organizing subgoals	5

energy on making corrections and adjustments. This was particularly evident in their activity planning, which the pair admitted produced ample activities; however, these sometimes lacked connection to the topic study or to each other.

A very close second as a preferred strategy was that of *searching for and selecting procedures*. Essentially a "search and find" approach, this strategy included identifying possible procedures (identifying component) and choosing from among them (selecting component), using situational, instructional, and individual variables as heuristic information. Employing this strategy, the teachers were afforded an opportunity to consider the accuracy of their choices and to envision the enactment of their plans. Since it encouraged mental rehearsal for instruction, the strategy led to specificity and fine-tuning in solving the planning problems. As a more sophisticated strategy, however, it required that the teachers consider more detail to a greater degree while still maintaining a sense of the whole. The memory demands associated with this strategy clearly challenged their pedagogic reasoning and patience, as reflected in their frequent frustration with the planning process, even as they worked together.

A third and much less used strategy was *making and checking predictions*, thus bringing one's prior knowledge to bear on the planning task. Although employed infrequently by the teachers, it focused and guided a more systematic use of their pedagogic knowledge in analyzing planning problems. The strategy called for the generation of sets of hypotheses that established the parameters of the problem. In short, this strategy aided problem definition, which helped to narrow the range of possible solutions, thus making the planning problem more manageable in terms of time, specificity, knowledge, and work. It also facilitated the development of fuller mental representations of the planning problem, thought to be an important char-

acteristic of developing expertise (Chi, Glaser, & Farr, 1988). Our teachers' infrequent use of this strategy, however, simply underscores previous research that reports novices' difficulties with prediction making due to their lack of professional knowledge and their inability to sort out relevant environmental cues (e.g., Borko & Livingston, 1989).

As a distant fourth, the strategy of *defining and organizing the problem* entailed identifying the difference between what is and what is desired and deciding on steps that might reduce this difference. As a form of means-end analysis, this strategy placed heavy demands on the teachers' ability to manage complexity in order to arrive at a solution. Essentially it required that they envision what might be while searching among relevant cues and alternatives for a well-planned course of action that might produce the envisioned image given their instructional contexts. Our novices' rare use of this strategy testifies to its sophistication in instructional planning. Unlike experts, who rapidly categorize problems and artfully orchestrate knowledge and technique to narrow choices, novices tend to struggle to represent and define complex problems, limited by their knowledge of task properties as well as their own cognitive control, that is, the ability to utilize their own knowing (Kennedy, 1987). That our beginners were unskilled in this strategy was especially evident in their metapanning activity, wherein they encountered much difficulty with defining the planning problem, as indicated by the considerable time they took to get organized. This in turn often produced "false starts" in other planning activities, which only exacerbated the complexity and arduousness of the overall planning process. As a result, solving the planning problem seemed "hard" and "frustrating."

In sum, the teachers tried different strategies in their attempts to solve the problem of planning for integrated literacy instruction. Some strategies were more prevalent



than others, which suggests their greater familiarity to the pair as planning strategies. That the teachers preferred more "concrete" strategies focused on finding a solution rather than adequately defining and representing the planning problem is not uncharacteristic of novice teachers, nor even of most adults when confronted with a complex problem (Carter, Sabers, Cushing, Pinnegar, & Berliner, 1987; Hayes-Roth, 1980). What it does belie, however, is the teachers' limited repertoire of planning strategies, which may have produced planning deficiencies that affected instruction.

## Discussion

Teacher, lesson plan book, and empty classroom: these are the images of instructional planning. Yet beyond the thoughtful activity these images have long implied, teacher educators and researchers are just beginning to understand instructional planning as a professional activity in teaching and to observe its development in teachers over time. Although simplistic models no longer suffice as descriptions of what teachers actually do when they plan, newer models have only begun to explicate the problem-solving processes that characterize this task, for example, Yinger's (1986) design process.

In this study, we observed novice teachers' planning as they attempted to embed literacy instruction into more comprehensive curricular goals aimed at expanding children's literacy and content knowledge. Our intent was to examine, in a preliminary way, the task and strategy characteristics of two teachers' planning, which we reasoned might inform our understanding of planning for integrated forms of literacy instruction as well as teacher development. Although tentative given our small sample and methodological constraints, our results reveal several characteristics of these two novices' planning for integrated instruction with possible implications for teacher preparation and development and further research.

As the features of this planning problem indicate, planning for integrated approaches to instruction may be more difficult than some other instructional planning tasks (e.g., single-subject planning), although we did not collect data on the teachers' planning for traditional instruction. The multiple kinds of planning that seem to characterize planning for integrated instruction, for example, point to a need to attend to many learning possibilities and alternatives at once when making choices for literacy instruction than are likely the case when planning for a single reading lesson around a big book or a basal story. To integrate literacy instruction, planning considerations must go beyond learning about writing and reading per se to their broader function in learning. Engaging in the multiple kinds of planning that such integration appears to require amplifies demands for time, specificity, knowledge, and work—features that only increase the difficulty of the instructional planning task.

For novices, this planning type may be especially challenging as they strive to come to grips with the uncertainties of classroom instruction, including literacy instruction. In fact, planning for integrated literacy instruction may be too hard for most beginners to do alone—an observation these novices attested to frequently. Their strong desire to collaborate with each other and with others who were more informed may belie a developmental need for external support to aid in locating and holding in mind the information and detail that must be attended to in order to plan integrated instruction.

As the teachers' accounts also suggest, the task is incredibly complex as a planning type. This is perhaps most evident in the teachers' organization of the task, which seemed to require coordinating several planning activities to construct a viable instructional plan. Although similar to newer views of teacher planning as a cognitive activity, planning for integrated instruction may require greater effort and skill on the teacher's part in order to obtain and main-

tain control of its multiplicity. Clearly this was the case for these two beginning teachers as they attempted to gain control of and systematize activities associated with the task and to sustain their efforts without losing patience. Unlike experts, who quickly define problems through their ability to recognize relevant cues and size up situations (when planning for traditional instruction), thus allowing them to organize their effort more efficiently, the teachers in our study struggled with the sheer quantity of information they had to consider, which tested their pedagogic reasoning, persistence, and attentiveness. For example, activity planning required not only a good grasp of developmental and age appropriateness of activities but facile use of pedagogical content knowledge as well to prepare meaningful activities of interest and challenge to young children within the limits of the classroom's resources. Understanding multifaceted problems like this so that plans might be properly conceived, much less organized for execution, seemed to stretch the beginning teachers' thinking and to test their commitment to the task. More than once they jumped to quick solutions or were reduced to inaction due to their frustration—responses that may signal a need for greater structuring and scaffolding of the integrated instructional planning task, especially in early learning stages.

The analysis of the teachers' strategy use further documents the challenges that integrated literacy instruction may present as a planning type. As we observed, the two beginning teachers' preferred strategies in solving the planning problem were of the forward-search type rather than those characteristic of problem reduction (Willats, 1990). That is, they tended to use trial-and-error search strategies rather than those associated with design processes (e.g., problem finding, formulation, and solution) (Schon, 1986; Yinger, 1986). However, although forward-search strategies are certainly planful, especially in conjunction with rich heuristic information, they seem

particularly unsuited to integrated instruction as a planning problem, since it is complex, undefined, and multidimensional. Under these problem conditions, the teachers' use of forward-search strategies, such as identifying, selecting, and trying out different instructional procedures to see if they worked, made heavy demands on their memory and persistence, thus magnifying the difficulty of the task. Their repeated references to how time-consuming the planning was for them and their desire to plan together so as to share the burdens of the task corroborate the drawbacks of their preferred strategies. Yet they persisted in using these strategies, while their use of problem-reduction strategies, such as making and checking predictions, remained quite limited, which strongly suggests that the teachers were unfamiliar with them. In short, the teachers seemed ill equipped to handle this planning problem, approaching it in familiar ways that may have sufficed under other planning conditions (e.g., single-subject planning) but proved ineffective for integrated literacy instructional planning. Put plainly, the teachers did not appear to know how to do what they needed to do so as to reduce the complexity of the task to a more manageable form.

These observations, albeit tentative at this point, have given us reason to pause in the recent rush to more integrated approaches to literacy instruction. Given the apparent difficulty and complexity of the planning task, novice and experienced teachers who are beginners to integrated literacy teaching and learning (e.g., integrated language arts, thematic teaching, or project work) may need to develop planning strategies and to experience forms of assistance not yet prevalent or well developed in teacher preparation and development if they are to learn *how to plan* in this way so as to offer effective literacy instruction. For example, our novices' appreciation for collaborative planning and desire for repeated opportunities to question their own work in the company of others suggest that begin-

ners may benefit from more socially constructed planning episodes that follow models of guided participation (Rogoff, 1990; Sharp & Gallimore, 1988). In these situations of discovery and meaning-making, someone more informed may structure the planning activities so as to reduce their complexity and offer "well-placed pointers" that direct the novice's attention to relevant cues and criteria for decision making (Rogoff, 1990). Moreover, through these interactions, novices may have an opportunity to come to view and evaluate the situation as an expert might, thus gaining feedback on their own thinking processes that may dramatically aid their ability to reason pedagogically (Shulman & Elstein, 1975). This, more than reading vignettes, watching teaching demonstrations, or even engaging in teaching, may be more powerful for developing beginners' abilities to provide integrated literacy instruction on an ongoing basis in their own classrooms.

However, as Schon (1986) and others (e.g., Casey & Howson, 1993) have argued, traditional coursework often falls short of providing the kinds of learning experiences novices need to solve ill-defined problems like integrated instructional planning from a constructivist perspective. Such problem solving cannot be taught as a technical task in contexts far removed from real situations. Rather, it is learned more effectively by "doing" in supportive contexts that provide ample opportunity to make sense of the situation. Applied to the preparation and development of reading teachers, this suggests a need for problem-centered approaches and ecologically rich settings that approximate the realities of integrated literacy instruction, such as well-crafted case studies, technology-based simulations, well-designed practica, and/or closely supervised field projects if novices are to gain control of this planning task and apply it to their professional activity (see also Kennedy, 1987).

Reflecting on our experiences with these two beginning teachers, we recognize the

great need for further research into the processes at work in planning for integrated instruction. Much remains to be done to understand the demands of this planning type, its conditions for decision making as a practical problem, and how these conditions are variously interpreted by novices and experts, that is, how they construct meaning within the problem situation. Narrowing the focus of research to specific components of the planning process in a developmental context may be especially fruitful. For example, examining the processes and products that emerge when beginning teachers *construct a representation of the planning*, including the problem and goal (i.e., their metaplanning), would be useful. In saying this, however, we also recognize, more fully perhaps, our great need to examine our own instruction as reading educators and to organize it in ways that truly guide our students in their efforts to plan and provide integrated literacy instruction.

## Appendix A Order of Daily Instruction

### Whole-Group Focus Time (15–20 minutes)

The teacher . . .

- introduces a new topic or theme;  
OR
- focuses on key ideas and concepts related to the topic or theme;  
OR
- extends children's understanding of ideas related to the topic or theme.

### Small-Group Activity Time (30–40 minutes)

The children . . .

- practice their language, literacy, and thinking skills related to the topic or theme;  
OR
- "try out" activities demonstrated in whole-group focus time;  
OR
- interact with their peers in joint problem solving;  
OR
- engage in conversations about what they are learning with adults.

### Sharing Time (10–15 minutes)

The teacher and children . . .

- recall experiences from small-group activity time;

- share special things about the topic or theme of study.

Reading Aloud Time (20–30 minutes)

The teacher and children . . .

- engage in a shared book experience related to the topic or theme.
- explore literacy features and functions.

## Appendix B

### Kinds of Planning Activities and Examples in the Domain of Planning for Integrative Instruction

#### Kinds of Planning Activities

#### Examples

- |                           |  |
|---------------------------|--|
| 1. Metapanning            | Planning time to plan<br>Looking at what you have  |
| 2. Topic Planning         | Generating a list of topics  |
| 3. Content Planning       | Breaking down a topic<br>Examining course of study<br>Identifying what children will learn |
| 4. Activity Planning      | Thinking about what to do in small groups<br>Linking activities to topic                   |
| 5. Environmental Planning | Thinking about room arrangement<br>Setting up areas  |
| 6. Revision Planning      | Looking back<br>Reformulating plan   |

## Appendix C

### Features Common across the Kinds of Planning Activities

- 1.0 Demand for Time
  - Personal time
  - Instructional time
  - Sequence and pacing
- 2.0 Demand for Specificity
  - High
  - Medium
  - Low
- 3.0 Demand for Knowledge
  - 3.1 Pedagogical content knowledge
    - Concern for:
      - Age appropriateness
      - Developmental appropriateness
      - Curriculum goals
      - Acquisition and production

- 3.2 Procedural knowledge
  - Concern for:
    - Organization of instruction
    - Management of instruction
    - Flow of instruction
    - Overall integrativeness of instruction and activity
    - Holding power and challenge of activity
- 3.3 Practical knowledge
  - Concern for:
    - "Do-ability" in context
    - Personal knowledge and skill
    - Others' perceptions
- 3.4 Professional knowledge
  - Concern for:
    - "Goodness of fit" of instructional plan
    - Worth
    - Adjustments and change in instruction
- 4.0 Demand for Work
  - 4.1 Obtaining and maintaining a sense of the whole
  - 4.2 Naming and framing the plan
  - 4.3 Strategizing instructional purpose and function
  - 4.4 Envisioning action in time and space
  - 4.5 Situationalizing learning events
  - 4.6 Assessing developing plan and enactment

#### References

- Allison, L. (1975). *The reason for seasons*. Boston: Little, Brown.
- Borko, H., & Livingston, C. (1989). Cognition and improvisation: Differences in mathematics instruction by expert and novice teachers. *American Educational Research Journal*, 26(4), 473–498.
- Borko, H., Livingston, C., & Shavelson, R. (1990). Teachers' thinking about instruction. *RASE*, 11(6), 40–49.
- Bruner, J., Goodnow, J., & Austin, G. (1956). *A study of thinking*. London: Wiley.
- Cambourne, B. (1988). *The whole story*. New York: Scholastic.
- Carter, K., Sabers, D., Cushing, K., Pinnegar, S., & Berliner, D. (1987). Processing and using information about students: A study of expert, novice and postulant teachers. *Teaching and Teacher Education*, 3, 147–157.
- Casey, M. B., & Howson, P. (1993). Educating preservice students based on a problem-centered approach to teaching. *Journal of Teacher Education*, 44(5), 361–371.
- Chi, M. T., Glaser, R., & Farr, M. (1988). *The nature of expertise*. Hillsdale, NJ: Erlbaum.

- Clark, C. (1983). Research on planning: An inventory of the knowledge base. In D. Smith (Ed.), *Essential knowledge for beginning educators* (pp. 5-15). Washington, DC: American Association of Colleges of Teacher Education.
- Clark, C., & Peterson, P. (1986). Teachers' thought processes. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3d ed., pp. 255-296). New York: Macmillan.
- Cochran, K., DeRuiter, J., & King, R. (1993). Pedagogical content knowing: An integrative model for teacher preparation. *Journal of Teacher Education*, 44(4), 263-272.
- Covington, M. (1987). Instruction in problem solving and planning. In S. Friedman, E. Scholnick, & R. Cocking (Eds.), *Blueprints for thinking: The role of planning in cognitive development* (pp. 469-511). Cambridge: Cambridge University Press.
- DeGroot, A. D. (1966). Perception and memory versus thought: Some old ideas and recent findings. In B. Kleinmuntz (Ed.), *Problem-solving: Research, method and theory* (pp. 19-50). New York: Wiley.
- Dewey, J. (1957). *Human nature and conduct*. New York: Modern Library.
- Ericsson, K. A., & Simon, H. A. (1980). Verbal reports as data. *Psychological Review*, 87, 215-251.
- Harlan, J. (1988). *Science experiences for the early childhood years*. Columbus, OH: Merrill.
- Hayes-Roth, B. (1980). *Human planning processes* (R-2670-ONR). Santa Monica, CA: Rand.
- Kagan, D. (1992). Professional growth among preservice and beginning teachers. *Review of Educational Research*, 62(2), 129-169.
- Katz, L., & Chard, S. (1989). *Engaging children's minds*. Norwood, NJ: Ablex.
- Kennedy, M. (1987). Inexact sciences: Professional education and the development of expertise. *Review of Research In Education*, 14, 133-167.
- Leinhardt, G., & Greeno, J. (1986). The cognitive skill of teaching. *Journal of Educational Psychology*, 78, 75-95.
- Mathematics plus*. (1992). New York: Harcourt Brace Jovanovich.
- McCutcheon, G. (1980). How do elementary school teachers plan? The nature of planning and the influences on it. *Elementary School Journal*, 81, 4-23.
- Moffett, J. (1968). *Teaching the universe of discourse*. Boston: Houghton-Mifflin.
- Morine-Dershimer, G. (1979). *Teacher plan and classroom reality: The South Bay study: Part 4* (Research Series No. 60). East Lansing: Michigan State University, Institute for Research on Teaching.
- Neisser, U. (1968). The multiplicity of thought. In P. C. Wason & P. N. Johnson-Laird (Eds.), *Thinking and reasoning* (pp. 307-323). Baltimore: Penguin.
- Neuman, S., & Roskos, K. (1993). *An integrated approach to literacy instruction*. Fort Worth, TX: Holt, Rinehart & Winston.
- Newell, A., & Simon, H. (1972). *Human problem solving*. Englewood Cliffs, NJ: Prentice-Hall.
- Pace, J. (1990). Making a mini-greenhouse. *Highlights*, 45, 18.
- Peterson, P., Marx, R., & Clark, C. (1978). Teacher planning, teacher behavior, and student achievement. *American Educational Research Journal*, 15, 417-432.
- Rogoff, B. (1990). *Apprenticeship in thinking*. New York: Oxford University Press.
- Schon, D. (1986). *Educating the reflective practitioner*. San Francisco: Jossey-Bass.
- Shulman, L. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4-14.
- Shulman, L. (1987). Knowledge and teaching: Foundations of new reform. *Harvard Educational Review*, 57, 1-22.
- Shulman, L., & Elstein, A. (1975). Studies of problem solving, judgment, and decision making: Implications for educational research. In F. Kerlinger (Ed.), *Review of research in education* (Vol. 3, pp. 3-42). Itasca, IL: Peacock.
- Spradley, J. (1979). *The ethnographic interview*. New York: Holt, Rinehart & Winston.
- Spradley, J. (1980). *Participant observation*. New York: Holt, Rinehart & Winston.
- Swanson, H. L., O'Connor, J., & Cooney, J. B. (1990). An information processing analysis of expert and novice teachers' problem solving. *American Educational Research Journal*, 27(3), 533-556.
- Tharp, R., & Gallimore, R. (1988). *Rousing minds to life*. Cambridge: Cambridge University Press.
- Tyler, R. W. (1950). *Basic principles of curriculum and instruction*. Chicago: University of Chicago Press.
- Weimann, E. R., & Friedman, R. (1988). *Alpha I—breaking the code*. Plainview, NY: New Dimensions in Education.
- Werner, O., & Schoepfle, G. M. (1987). *Systematic fieldwork: Ethnographic analysis and data management* (Vol. 2). Newbury Park, CA: Sage.
- Wertsch, J. (1986). *Vygotsky and the social formation of the mind*. Cambridge, MA: Harvard University Press.
- Willatts, P. (1990). Development of problem-solving strategies in infancy. In D. F. Bork-

- lund (Ed.), *Children's strategies* (pp. 25–31). Hillsdale, NJ: Erlbaum.
- Yinger, R. (1977). *A study of teacher planning: Description and theory development using ethnographic and information processing methods*. Unpublished doctoral dissertation, Michigan State University.
- Yinger, R. (1979). Routines in teacher planning. *Theory into Practice*, 23(3), 163–169.
- Yinger, R. (1986). Examining thought in action: A theoretical and methodological critique of research on interactive teaching. *Teaching and Teacher Education*, 2(3), 263–282.