INTRODUCTION: TOWARD A THEORY OF TEACHING AND LEARNING

Reading and writing development are individual processes which reflect the evolving skills of the individual language learner. Instruction, on the other hand, is a social process, rooted in the interaction between teacher and student. Through the intersection of development and instruction, individual learners gain the power to use language to understand their world and to act within it. Reflecting the split between individual and social, most research in the field of reading and writing has concerned itself either with charting the course of individual development, or with delineating the characteristics of effective instruction. Although both traditions have been valuable, we will argue here that they should be integrated through a more general theory that systematically relates individual development to the social processes that surround it. From such a theory, we will emerge with more effective principles for instruction, as well as with a better explanation for the patterns of development that have been described in previous studies. In doing so, we will also clarify our understanding of the deeply related but functionally different activities of reading, writing, and speaking.

The need for a more encompassing theory is evident whether we start independently with either development or instruction. If we start with development, it is quite clear that the skills that individuals learn are constrained (or fostered) by the particular cultural and educational contexts within which the individuals grow up (Au, 1980; Heath, 1983; McDermott, 1977; Scribner

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What people are expected to read or write as well as how they are expected to approach these tasks has differed across historical periods within a culture and from one culture to another (Graff, 1981; Ong, 1982; Resnick, 1983; Resnick & Resnick, 1977). Some of these differences may be trivial, reflecting simple variations in culturally most acceptable or prestigious forms; others may be more significant, reflecting or perhaps even fostering different modes of thinking and reasoning (cf. Applebee, 1984; Langer, in press; Olson, 1977, in press). In either case, however, the outcomes of individual processes of development are clearly shaped by the social contexts in which they are embedded, and can only be fully understood in relation to those social contexts.

The literature on instruction in reading and writing, on the other hand, has focused on transmission of information from teacher to pupil, with little attention to the nature of individual development. Lacking a broader conceptualization of the nature of instruction and development, the field has been characterized by a relatively unsystematic exploration of microscopic variations of teaching method. Because these studies have not been framed within a theory of teaching and learning, they have not led to powerful generalizations about effective teaching (Langer, 1984). Further, because reading and writing have been treated as separate “contents” to be taught, there has been little systematic exploration of the extent to which reading and writing instruction may be part of a common enterprise of literacy learning. This enterprise builds upon but moves beyond earlier processes of language learning, and is at the heart of learning to function within the specialized contents of the various academic subject areas.

Rather than providing an exhaustive review of previous research on development or instruction in reading or writing, the present chapter will focus on research that contributes to a general theory of learning and instruction in reading and writing. (In keeping with the general topic of this section, our examples will draw somewhat more heavily from writing than from reading, but the argument is a more general one.) The theory that we will present grows out of a view of language learning that has been heavily influenced by the work of both Vygotsky and Bruner.

Vygotsky (1962, 1978) focuses on language as a social and communicative activity. He argues that higher level skills are the result of the child’s learning of social/functional relationships; in becoming literate, children learn the structures and processes inherent in socially meaningful literacy activities. In this way, processes that are initially mediated socially become resources available to the individual language user. Interactive events are thus at the heart of learning to read and write; they involve the child as an active learner in settings where an adult provides a systematic structure, and sometimes direct guidance, that governs the child’s participation in initial reading or writing activities. In the course of successive experiences, children develop their own
self-regulatory abilities. Thus, approaches that are initially socially mediated are eventually internalized, and become part of the repertoire of the individual.

Bruner similarly views the adult/child tutorial relationship as critical to language learning (Wood, Bruner, & Ross, 1976). He uses the term “scaffolding” to describe the tutorial assistance provided by the adult who “knows how” to control those elements that are beyond the child's capabilities. Bruner views language as providing the basis for concept formation, as a tool for cognitive growth (Bruner, Olver, & Greenfield, 1966). Further, he sees writing as a powerful tool essential for thinking (1973), and schooling as promoting the growth of reasoning abilities through training in the mastery of the written language. Bruner believes written language is particularly important in encouraging cognitive growth because it is abstract—the referent is not as frequently present as it is during many forms of oral discourse. The language of school is particularly important in developing abstract literacy skills, requiring students to go beyond the information given and to deal with possibilities and abstractions.

Both Vygotsky and Bruner see language learning as growing out of a communicative relationship where the adult helps the child to understand as well as to complete new tasks. They also see literacy as encouraging the kinds of thinking and reasoning that can support higher levels of cognitive development.

Our general approach to the study of reading and writing is to treat them as an extension and reformulation of earlier language-learning processes, and to embed our analyses in more general frameworks of language learning. While acknowledging the profound effects that literacy may have on cultural as well as individual development, we will argue that there are basic processes of learning and instruction that hold for both written and oral language learning—and, we suspect, for the learning of many other complex skills as well. (On the special demands of written in contrast to oral language, see especially Heath, 1982; Olson, 1977, in press; Tannen, 1982.) It is also true that literacy activities are never content-free; at the root of instructional interaction are the student’s goals of learning or explicating some content, or of learning to do something new or to do it differently. These goals affect the nature of the text being written or construed and, in turn, help to shape the nature of the instructional interaction, the skills to be engaged, and the content to be understood. Thus one does not simply learn to read and write: one learns to read and write about particular things in particular ways. This is a process that begins with the cereal boxes and stop signs familiar to the preschool child, and continues in the basal readers of the elementary school, as well as in the specialized content domains of academic discourse that children encounter throughout their schooling.

This chapter will be limited to research that contributes directly to our
emerging theory of instruction. We will begin by looking at the role of interaction between adult and child, as revealed in some studies of early language learning. These studies suggest some general principles underlying successful instructional dialogue. (Although these early examples generally focus on oral rather than written language, we believe the roles played by the adult and child are also useful in understanding the roles played in uses of reading and writing.) We will then turn to processes of teaching and learning in more formal instructional settings, including our own studies of classroom instruction. In the final section of the chapter some examples of current research on teaching methods will be examined and reinterpreted in light of the theoretical stance we are taking.

TEACHING AND LEARNING IN ADULT-CHILD INTERACTIONS

Let us begin with the work of Luria (1929/1977–1978) who, with Vygotsky, views language as requisite for thought, and language learning as the result of a social interaction in which the learner has a task to accomplish and the adult serves as facilitator. Both Vygotsky and Luria maintain that the contribution of the social environment is a critical feature of every learning activity because it is through the social interchange that language is mediated and learning takes place.

In keeping with this view, Luria sees writing as developing from the child’s ability to use cues in the social environment as functional signs—as a way to express or serve meaning. He showed that children’s earliest writing was imitative of adult behaviors, and that as the children’s understanding of the adult behavior changed, their engagement in the activities also changed. For the youngest children he observed, their scribbles were socially and culturally acquired behaviors; they did what they saw. They did not use their scribbles as an aid to memory or recall. From this imitative beginning, the children’s scribbles evolved into idiosyncratic sign systems, preserving relative length or segmentation of utterances, but not preserving content. In social situations with the people around them, they learned the external conventions of writing—even before they assimilated its meaningful functions. Only later did the children begin to understand the use of writing as a mechanism to encode particular meanings. When this occurred, however, the skills and abilities that they had learned during the earlier, more external, social phases were useful in helping them learn to use writing in more individual and functionally complex ways. (See Ferreiro, 1984, 1985, for an analysis of the cognitive problems being dealt with in these early stages of children’s writing.)

In addition to acknowledging the impact of the social environment, Russian studies of the psychology of language learning emphasize the power of the communicative interaction in learning. Vygotsky (1962) puts such confidence in the strength of this interaction that he states, “What children can do with the assistance of others might in some sense be even more indicative of their mental development than what they can do alone” (p. 85).
The notion of interaction, or dialogue, that functions as a kind of “scaffold” to support early language learning has been developed in the work of Bruner and his colleagues (Bruner, 1978; Ninio & Bruner, 1978; Ratner & Bruner, 1978; Wood, Bruner, & Ross, 1976). They use the term “scaffold” to characterize the role of the adult in adult-child dyads, in situations where the dialogue between adult and child serves both as an immediate end in itself, and as the context within which the child gradually learns more sophisticated language functions. Commenting on this concept, Bruner (1978) suggests that the adult caretaker reduces the degrees of freedom with which the child has to cope, concentrates the child’s attention into a manageable domain, highlights critical features of the task, and provides models of the expected dialogue from which the child can extract selectively what is needed to fill the appropriate role in discourse. He goes on to describe the caretaker as one who also helps the child extend new language skills to broader contexts of use, and serves as a guardian of newly confirmed communicative hypotheses, preventing the child from sliding back toward earlier forms once more sophisticated ones have been achieved.

To provide a better sense of the phenomenon Bruner is describing, we can turn to the data from particular studies. Ninio and Bruner (1978) investigated the development of labeling skills, in the context of early picture-book reading. Their data consisted of 30-minute videotapes of free play involving one child, Richard, and his mother, every 2 to 3 weeks between the ages of 8 months and 1½ years. Twelve of these sessions included spontaneous book-reading episodes, in which mother and child jointly looked at a picture book, and the major activity was one of attaching verbal labels to the pictured objects. (This activity is also an interesting example of the intermingling of oral language learning in the development of early literacy-related skills.)

Ninio and Bruner’s concern in their analyses was with the mechanisms through which this very young child learned how to label. In analyzing their data, they commented that the “most striking characteristic of labelling activity is that it takes place in a structured interactional sequence that has the texture of dialogue” (pp. 5–6), with patterned turn-taking in a rule-governed sequence. This pattern had four elements that occurred in a fixed sequence:

1. Attentional vocative (Look)
2. Query (What’s that?)
3. Label (It’s an X)
4. Feedback utterance (Yes) (Order optionally third)

This pattern, with such attendant features as the average number of turns per episode and average length of a turn, remained essentially constant across the period studied, in spite of the extremely rapid growth that Richard was experiencing in other aspects of his language use.

Within this fixed frame, however, there was a clear developmental pattern
in Richard's labeling skills. During the period studied, he moved from non-vocal gestures (pointing, smiling) to nonlexical vocalization, and finally to lexical vocalization, using adult-like words as labels for the pictured objects. Ninio and Bruner note a number of characteristics of the mother-child interactions:

1. The picture-book reading ritual builds on already developed skills in dialogue (in the sense of the child's ability to participate in mutually contingent exchanges).
2. No major modification of the mother's customary use of language is required to carry out the book reading; she is acting in a "linguistically conventional manner" (p. 8).
3. Part of this conventional linguistic behavior is the expectation of response, and the imputation of meaning to the responses that occur. The child is seen by the mother as having the intention to carry out the function that she is trying to teach him.
4. The situation as a whole is highly structured, with strict ordering rules and a limited number of critical elements.
5. The situation allows the child to gradually take over one or more of the elements in the labeling routine. The child first learns to respond to a labeling request, and eventually to initiate a labeling sequence.

Ninio and Bruner make two other observations that are relevant to our concerns with instruction. One concerns the role of imitation in the learning of labels. Analyzing the contingent probability of the child uttering a recognizable label, they found it to be much greater if the mother provided the correct conversational setting for labeling (by asking What questions or allowing the child to initiate the dialogue), than if the mother offered the label for imitation. Providing the child with a model to imitate actually depressed the probability that he would utter the word immediately.

The second point concerns the mother's tendency to impute meaning to the child's attempts at labeling. Ninio and Bruner comment that this attribution of meaning is "anything but indiscriminate or self-delusory" (p. 10), being based on a constantly updated, detailed inventory of the child's experience. The mother's responses to the child were filled with explanations that made the sources of her expectations clear:

You haven't seen one of those; it's a goose. You don't really know what those are, do you, they are mittens; wrong time of year for those. It's a dog; I know you know that one. (p. 10)

In a parallel paper, Ratner and Bruner (1978) explore the development of language in two other highly structured contexts. In one case, they trace Rich-
ard's activity as he learns to play peekaboo between the ages of 5 months and 2 years. In the other, they study a second child, Jonathan, as he learns to play a game involving the appearance and disappearance of a toy clown. In both cases, Ratner and Bruner found that the structure of the game served to (1) limit and render highly familiar the semantic domain within which utterances would be used; (2) provide a highly predictable task structure with clear and reversible role relationships; and (3) allow the child, as mastery developed, to take over the adult's role in the game.

These studies by Bruner and his colleagues provide rich descriptive accounts of individual children learning rules of language and interaction in the process of participating in language episodes with adults whose knowledge of these rules is much more sophisticated and complex than their own. Similar processes have been described in studies involving larger samples of children. Wood, Bruner, and Ross (1976), in a study involving thirty 3-, 4-, and 5-year-olds, examined the tutorial process in which the children were taught how to build a three-dimensional structure. They looked at the changing interaction between tutor and child, and compared these across the three age groups. Their results indicate that it was not so much the amount, but the kind of help that was needed that marked the differences between the younger and older children. The 3-year-olds needed to be "lured" to the task, and shown the activity by demonstration; the 4-year-olds responded more frequently to verbal interaction and prodding; while the 5-year-olds used the tutor to check their own constructions.

Wood, Bruner, and Ross use this work to indicate some of the properties of an interactive instructional exchange in which the requirements of the help are generated by the situational demands:

1. Recruitment—The tutor must enlist the child’s interest.
2. Reduction in degrees of freedom—The tutor must reduce the size of the task to the level where the learner can recognize a fit with the task requirements.
3. Direction maintenance—The tutor must keep the child in pursuit of the task goal.
4. Marking critical features—The tutor must accentuate certain features of the task that the learner can use to compare what was actually produced with the desired “correct” production.
5. Frustration control—The tutor must help reduce stress—to make the tutorial situation less stressful than if the adult had not been present.
6. Demonstration—The tutor must demonstrate an “idealization” of the task by means of completing the task or explicating a solution with the expectation that the learner will “imitate” it in a more appropriate form.
This research was based on the view that tutorial interactions are a critical feature of child learning, and these interactions often involve scaffolding that enables children to do what they cannot otherwise do. Scaffolding consists of providing help with elements that are beyond the children’s capabilities, while encouraging them to complete those elements that are within their range of competence. This not only helps the children to accomplish the task at hand, but also shows them new strategies that will eventually allow similar tasks to be completed without the help.

Similar processes are evident in studies by Wertsch (Wertsch, 1979; Wertsch, McNamee, McLare, & Budwig, 1980), who sets his work within the general theoretical framework developed by Vygotsky (1962, 1978), concentrating in particular on the role of social interaction in the development of higher psychological processes. The processes Wertsch details are similar to those studied by Bruner and his colleagues: they concern the ways in which children learn to control their own behavior by first participating in situations where that behavior is controlled by adults who understand the rules.

Wertsch and his colleagues (1980) studied the interaction between 18 mother-child pairs in a problem-solving situation. The children ranged in age from 2:7 to 4:7. The task they faced was to assemble a truck puzzle to match a model. The cargo for the truck consisted of identically sized but differently colored pieces, so that the task could be completed successfully only if the model were used for reference. The focus of their analysis was on the extent to which the use of the model was self- or other-regulated; that is, whether the children looked at the model on their own initiative, or only in response to some form of prompting from the mother.

As expected, there was a move from other-regulation to self-regulation in this task, across the age range studied. Of more interest, however, are Wertsch’s (1979) analyses of four stages in the children’s movement toward self-regulation.

**Level 1.** At the first level, the child does not share the adult’s perception of the task situation, and thus is unable to respond to the adult’s directives in the way that the adult intends. One 2½-year-old, for example, simply did not realize that the puzzle represented a truck, and that the truck had windows. When his mother mentioned a “window” section, the child’s attention wandered to a window in the room; the same child also decided that the wheels of the truck were cookies, and proceeded to eat them.

In order to regulate the child’s activity at this level, it was necessary for the adult to redefine the task in terms of the child’s frame of reference—in particular, through the use of deictics such as THIS and THAT, and by nonverbal pointing. This would allow the child to function on the basis of a definition of the situation that consisted of ‘this thing’ and ‘that thing’ rather than of a truck with windows, wheels, and a headlight.
Level 2. At the second level, the child interprets the utterances in terms of the task, but fails to understand their full implications. At this stage, the child may, for example, fail to understand the relationship between the model and the task, and will thus be unable to utilize the information in the model without explicit guidance on how to do so. ("I'm looking where you told me, but I still don't see what it has to do with this.")

Level 3. At this level, the child begins to take on a significant share of responsibility for the task. The general rules of the situation are understood, and the child can respond successfully to vague hints and suggestions. Child and adult models of the situation now seem congruent, and the adult role is primarily one of providing reassurance and help when the child gets stuck.

Level 4. Problem solving shifts to self-regulation, and no assistance is needed from the adult.

Examining children's speech in the transition into the fourth stage, Wertsch found striking parallels to the patterns of interaction in earlier stages—except that the child was now playing both roles in the dialogue, talking herself through the task.

In a synthesis paper based on his own work, Wertsch (1977) speculates how metacognition (monitoring, integrating, and coordinating various aspects of a task) is developed through adult-child interactions at home and is then carried over into the orchestration and accomplishment of school tasks. His interpretations, focusing on the early social interaction between child and adult, are an outgrowth of Vygotsky's analysis of higher psychological functions as being first learned on a social (interpsychological) plane, and later moving to the individual (intrapsychological) plane of functioning. In the case of metacognitive development, Wertsch suggests that both mothers and teachers help children solve problems by directing them toward the next step, keeping the goal before them, and helping them plan ways to reach that goal. As part of the instructional interaction, adults provide information about metacognitive procedures. They (1) inform the child about the nature of the goal; (2) make the child aware of the facts relevant to the task; (3) arrange the environment in a way that helps the child deal with each step of the task separately; and (4) remind the child where she or he is in that task.

Wertsch's work, like Bruner's, can be interpreted as a description of the child's gradual internalization of the scaffolding provided by an adult in a rule-governed context. Wertsch (1979) summarizes:

It becomes apparent that what the child has mastered as a result of functioning in other-regulation communicative contexts at the various levels is all the procedures in a language-game. That is, she/he has not simply mastered the ability to carry out one side of the communicative interaction by responding to the directives of others. She/he has taken over the rules and responsibilities of both participants in the language-game. These responsibilities were for-
merly divided between the adult and child, but they have now been taken over completely by the child. The definitions of situation and the patterns of activity which formerly allowed the child to participate in the problem-solving effort on the interpsychological plane now allow him/her to carry out the task on the intrapsychological plane (p. 18).

Wertsch and Stone (1985) argue that the process of understanding socially defined activities pivots around the child’s learning to deal with the signs that are used in social interaction. This mechanism of learning to deal with and control culturally meaningful signs is at the core of the process of internalization.

Rogoff and Gardner (1984) also address the question of the ways in which responsibility for task completion is transferred from adult to child. They describe a situation where a mother was asked to help her 6-year-old son learn to organize pictures of household objects into colored boxes. After the items were sorted, they reviewed where the items had been placed. The mother said, “Just look at it again and see if we can see any similarities that’ll help you remember.” Then she pointed to a box and helped her son get started, and waited for his response. Her attempts to involve the child were apparent from her pauses, and he filled in the “blanks” more and more as the task progressed. The mother provided a structure to facilitate his recall, but did this to help her son take on the major reconstruction role himself. He understood this aim, and by the end of the task, he took on the burden of the task himself.

Studies such as these highlight both what is being learned and how it is being learned, in early contexts of language learning. What the child is learning includes

1. A definition of the situation; that is, an understanding of the purpose of the activity. Unless the participants construe the activity in somewhat similar ways, learning is unlikely to take place (cf. Wertsch’s Level 1);
2. An understanding of the structure and implications of the situation; that is, an understanding of the constituent parts and the ways in which they relate to one another. (In reading and writing, this will include the specialized structures of content domains.)
3. Specific routines for regulating one’s behavior in this context.

The how includes participation in a dialogue that has a number of characteristics:

1. A clear structure with well-defined roles for the participants.
2. Reversibility—that is, the novice can eventually take over the functions of the more expert participant.
3. An assumption of meaningful intent on the part of all participants.
4. Primary attention to the accomplishment of the task, rather than on the teaching of task-relevant skills, though the purpose of specific steps in relation to the goal may be highlighted by the adult’s commentary.
From one perspective, the studies of early language learning cited here are also studies of instruction; the role of the adult in these interactions is that of teacher or tutor, the role of the child is that of student. The patterns of these interactions bear some resemblance to patterns of classroom instruction, though they also differ from the discourse of most classrooms in a number of important ways, to which we will return later. We have only recently begun to understand the nature of these interactions, and more recently still to begin to use them as a framework for examining instruction. Cazden (1979), in an important paper, summarizes recent research on discourse learning, and proposes Briner's studies of peekaboo as a starting point for a new instructional model. In our own papers, we have been developing the concept of instructional scaffolding as an important component of effective instruction in reading and writing, functioning much as the adult in the mother-infant pairs: simplifying the situation, clarifying the structure, helping the student accomplish tasks that would otherwise be too difficult, and providing the framework and rules of procedure that the student will gradually learn, so that the instructional support will no longer be necessary (Applebee & Langer, 1983; Langer, 1984; Langer & Applebee, 1984, 1986). In this section we will review this work and that of other researchers who have been looking at instruction from related theoretical vantage points (e.g., Bereiter and Scardamalia; Cole and Griffin; and Palincsar and Brown).

Theory-Based Studies

Palincsar and Brown (1984) developed a reading-comprehension training study based on the notion that intrapsychological (individual) skills could be best developed by interpsychological (teacher-student) activities. Palincsar and Brown wished to develop an instructional environment where the students could participate at any level they could, where they could witness the success of their activities, where they would be involved in actual reading experiences, and where the goal of the activity would be obvious to the students. They also wished to use proleptic teaching (Rogoff & Garner, 1984; Wertsch & Stone, 1979). In proleptic teaching, the student carries out simpler aspects of the task while observing and learning more complex forms from the adult, who serves as a model.

Palincsar and Brown designed an intervention study that emulated the kinds of naturally occurring guided learning interactions described by Bruner and Wertsch, where the adult could model more expert comprehension behaviors while guiding the child to perform with increasing levels of competence. They developed a reciprocal teaching activity, where the adult guides the student to interact with the text in gradually more complex ways as the student takes over the teaching role.

Palincsar and Brown worked with seventh-grade poor comprehenders, and
used reciprocal teaching procedures focusing on summarizing, questioning, clarifying, and predicting to improve reading comprehension. The students were divided into four groups, two of which received regular instruction: one group engaged in reciprocal teaching, one group was taught to locate information in the ways generally taught in remedial reading classes, one group took the experimental group’s regular assessment tests but did not receive treatment, and one group completed only the criterion tests. Thirteen expository passages were selected for training, and 45 shorter passages were selected for assessment purposes. Ten comprehension questions were developed for each of the assessment passages.

The reciprocal teaching students worked in groups of two with an adult. Each day a passage was introduced, then the students and teacher took turns generating summaries and questions, clarifying more complex sections of the text, and making predictions about what would happen next. Students, as well as the teacher, took turns playing the teacher’s role—the students were guided to behave more like the teacher. Throughout the activity, the teacher was available to offer assistance when it was needed. The second experimental group received training to help them answer the types of questions generally asked in remedial reading texts and workbooks. This teaching procedure involved demonstration and practice.

Results indicated that the reciprocal teaching activity led to significant improvement in the quality of the summaries given and questions asked, in performance on criterion tests of comprehension, in generalization to classroom activities, in maintenance of learning, and in standardized test scores.

Cole and Griffin (1984), in developing a remedial study for minority children, wanted to change the children’s notion of the process of reading from a focus on letters, sounds, and words to a focus on meanings. To do this, they created an instructional setting where they involved the students in socially mediated, meaningful reading experiences. They planned interpersonal reading “dramas” with the expectation that the social activities would move the students from the interpsychological toward the intrapsychological plane.

An activity they called “Question Asking Reading” was based on Palincsar and Brown’s reciprocal teaching procedure (see Raphael and Pearson [1985] for a related questioning activity). The first part of the activity focused on a discussion of the goal of the activity—why they were reading in the first place. This was followed by introduction of the first paragraph of the text (it was difficult for most of the students to read), and handing out of cards with commands to follow after reading the paragraph silently. The cards said: (1) Ask about the words that are hard to say. (You do not have to admit that they are hard for you to read.); (2) Ask about words whose meanings are hard to figure out; (3) Pick the answerers; (4) Ask about the main idea; (5) Ask about what is going to happen next. The children developed their questions, and a scribe wrote down the group’s consensus about a good question. This ques-
tion was added to a list of questions the children were asked to answer at the end of the reading. A researcher and one or more undergraduates were always present as coparticipants to supply assistance as it was necessary. Discussion focused on difficult words, best ways of getting at the main idea, and good questions.

The test consisted of three paragraphs, one of which the children had not already read. Questions were a combination of those the children had constructed themselves and others added by the research team. After the test, the children scored their papers and criticized the various questions (as they had done before). In all cases, the adults worked along with the students to share knowledge, and to create a situation where the children could work on their own to the point where help was necessary.

Cole and Griffin report three levels of change:

1. Children who could not understand (or those who misunderstood) the passage at the beginning of the activity could understand it at the end, and were able to formulate and answer interesting questions.
2. As the training progressed, the children began to anticipate the demands of each of the card commands.
3. Over time, the children approached the reading activities with greater emphasis on meaning.

Cole and Griffin suggest that remediation occurs in the socially cooperative type of environment they set. The children learn to treat print as a symbolically meaningful activity, rather than as a set of arbitrary signs. This is because the children’s involvement in learning is coordinated by the adults’ definition of reading, and the reorganization of the social environment permits new learning to take place.

Beginning from a different tradition, Bereiter and Scardamalia (1981) have developed the notion of procedural facilitation, an approach in which adults guide students’ learning to write and think. They see younger and older students as constructing different problem representations, with younger children perceiving more complex problems in simpler ways. Procedural facilitation is used to reduce the executive demands of a task in ways that help students use the knowledge they already have. However, unlike the instructional procedures discussed above, the adult does not enter into the task as an overt collaborator. Instead, the learner “does it all,” but under conditions where the adult has already reduced the task demands.

Bereiter and Scardamalia (1981) describe several instructional studies using procedural facilitation. In one study, Scardamalia asked children to produce all possible combinations of a set of combinatorial stimuli such as shapes, colors, and patterns. She gave them a procedure for dealing with the
task, and had them begin by combining only two sets, and working up to more. Her study showed that children as young as eight could develop appropriate strategies themselves. In another study, Anderson, Bereiter, and Smart had children write a list of words they thought they might use in their papers, to facilitate access to topical knowledge. Without adult intervention, the activity resulted in the children's writing longer and better elaborated papers. Bereiter, Scardamalia, Anderson, and Smart facilitated students' switching back and forth between sentence composing and deciding what kind of sentence to produce. The students were asked to choose from among a list of discourse elements before composing each sentence. This approach helped them use a larger number of discourse elements, with greater variety than they otherwise would have used.

Based on these and related studies, Bereiter and Scardamalia conclude that procedural facilitation is helpful either when the overall task demands are high, or when children's ability to understand the task demands exceeds their ability to meet those demands. It enables students to tackle somewhat more complex tasks than they normally could. These conditions occur in writing when children have difficulty orchestrating and applying all they already know, and also have difficulty carrying out the behaviors required to reach their task goals.

Bereiter and Scardamalia suggest several principles to guide procedural facilitation:

1. Use procedures that emulate mature monitoring processes, but in a simpler way through easier routines or surrogate tasks.
2. Reduce the attention students need to coordinate their monitoring routines by setting up patterned routines.
3. Provide finite sets of choices.
4. Structure activities to bypass rather than support immature behaviors.
5. Foster metacognition by making cognitive operations more overt.
6. Provide labels to make tacit knowledge more accessible.
7. Use procedures that can be scaled down or upward in complexity.

Although emanating from somewhat different theoretical traditions, from our perspective Cole and Griffin's structured activities, Palincsar and Brown’s reciprocal teaching, and Bereiter and Scardamalia's procedural facilitation share many features with the studies of child language learning that we have already described: assistance is provided during the task, at places where it is needed rather than in isolation from task goals; the aids that are offered are procedures of general utility that can be drawn upon in a variety of other contexts; the procedures model the procedures of more mature language users, highlighting options that are available; and the procedures in general simplify and clarify the structure of tasks that would otherwise be too diffi-
cult. They differ in the degree to which understanding of the goals, the means, and the options reside in the learner, as opposed to the teacher.

**Components of Effective Instruction**

Our own studies of literacy instruction have focused on the nature of effective instructional interaction amidst all of the complexities of ongoing instruction in natural classroom settings. In one series of studies (Langer & Applebee, 1984, 1986), we focused on classrooms where teachers placed particular value on the quality of the child’s contribution to the classroom dialogue, and where the emphasis was on higher-order rather than basic skills. Spending anywhere from 4 months to 2 years in individual classrooms, we developed detailed case studies of “model” teachers using such approaches, as well as of experienced teachers beginning to implement such approaches for the first time. Because reading and writing are never content free (and therefore should always be taught in the service of some domain-related or task-related goal), we worked with social studies, science, and literature teachers, helping them use writing activities as a way to foster thinking and learning about the course content. As frequent observers in the classrooms, we were able to compare students’ and teachers’ goals and understandings, as well as the kinds of knowledge needed for task completion and the nature of the help given.

One of the principal results from these studies has been the conclusion that such an emphasis on writing as a way of learning may be impossible to implement when models of instruction tend to stress the role of the teacher as the evaluator of student learning and emphasize the importance of “coverage” of content rather than mutual exploration of interpretations (Langer, 1984). This has led us to explore “instructional scaffolding” as an alternative model of instruction that is grounded, on the one hand, in the problems that we have observed in our studies of instruction and, on the other hand, in our understanding of the studies of early child language learning, discussed earlier. In its present form, the model falls short of a complete theory of instruction, functioning instead as a metaphor that captures the most important dimensions of change that are needed for effective literacy instruction. In our earlier papers (Applebee & Langer, 1983; Langer, 1984; Langer & Applebee, 1984, 1986), we have proposed five components of effective instructional scaffolding: Ownership, Appropriateness, Structure, Collaboration, and Transfer of Control. We will summarize each of these briefly, highlighting the ways in which they relate to the studies of child language acquisition, as well as the ways in which they seem to fall short in current practice.

1. **Ownership.** Effective instruction gives students the room to have something of their own to say in their writing or in the interpretations they draw in their reading. They must see the point of the task, beyond simple obedience
to the teacher’s demands. It is this sense of purposefulness that integrates the various parts of the task into a coherent whole and provides a sense of direction. It is similar to the focusing of attention and interest in Bruner’s studies. The focus must be on what is being accomplished through writing or reading, if the student is to learn procedures to carry out those purposes.

In practice, this focusing is often neglected. Studying typical patterns of literacy instruction in American secondary schools, we have found that the majority of school tasks require recitation of previous learning, in which the student has little room to claim ownership for what was being written or read (Applebee, 1981; Langer, 1984; Langer & Applebee, 1984, 1986). In process-oriented writing instruction, the process supports are often seen by the students as separate activities, unrelated to the broader writing goals that the process activities were meant to support. In reading, little room is left for students to interpret texts in ways that are different from that expected by the teacher.

2. Appropriateness. Effective instruction builds on literacy and thinking skills the students already have, and helps them to accomplish tasks that they could not otherwise complete on their own. As Vygotsky (1962) puts it, effective instruction is aimed not at the ripe, but at the ripening functions. (More specifically, Vygotsky argues that instruction should be addressed at the zone of proximal development, defined essentially as tasks that a learner can complete with appropriate help, but would be unable to complete unaided.) In each of the studies we examined earlier, the mother-infant dyads drew on language resources the child already had (however simple these might be), stretching them to new and more complex contexts. When the stretch was too far, as for children at the first level in Wertsch’s puzzle-solving task, the dialogue fell apart and progress resumed only when the adult redefined the task in terms closer to the child’s understanding of the situation.

Again, studies of literacy instruction suggest that this principle is more often violated than observed. When students are asked to undertake new tasks, the tasks too often are not set in the context of skills the students already have. This manifests itself in two ways: (1) as the assumption that all that is necessary is to give students a topic to write about or a passage to read that is at their “level,” and they will somehow know how to do it; and (2) as the assumption that every element of a new task must be taught from scratch, as though the students had no resources upon which to draw.

3. Structure. Effective instructional tasks make the structure of the activity clear, and guide the student through the activity in a way that provides effective strategies for use in other contexts. Put another way, such tasks produce a natural sequence of thought and language, providing effective routines for the students to internalize.
Structure of this sort is one of the most consistent features in the studies of early language acquisition—the child learns to do new language tasks by being led through them in the context of a supportive dialogue. This insures that skill learning includes a sense of the appropriate contexts for use. New procedures and routines are embedded in the contexts they serve, rather than being presented as isolated components that may or may not be seen as relevant. (Embedded in this way, the use of new procedures and routines may be highlighted by the adult’s commentary, but this is very different from teaching the procedures and routines as skills out of context.)

In practice, literacy instruction is usually organized around skills to be learned rather than purposes to be accomplished. Current models of curriculum stress hierarchies of skills, often in elaborate scope and sequence charts, and current teaching and testing emphasize the component skills rather than the whole. Although recent attention to process models of instruction seems to be moving toward teaching that is responsive to “natural” stages in the reading or writing task, very few process approaches have made their way into classrooms. The emphasis, in both reading and writing, remains on isolated skills or isolated content. Most students write little, and when they do write, the writing usually involves a first-and-final draft of a page or less, produced in one class period in response to an assignment that specifies an appropriate length, topic, due date—and little more.

4. **Collaboration.** Effective instructional interactions build upon and recast student efforts without rejecting what the students have accomplished on their own. This is similar to adult-child interactions, in which the adult assumes that the child has something that he or she wants to say or do, and works with the child to carry this through to completion. The adult’s repertoire of devices includes telling, modeling, extending, rephrasing, questioning, praising, and correcting. These devices are employed in the service of the task (book reading, peekaboo, puzzle building), rather than to judge the child’s performance.

Teachers’ roles in literacy instruction, however, are rarely collaborative. Much more frequently, the role is one of evaluation, usually tied to previous learning rather than to learning-in-progress. Collaboration is often thought of as cheating rather than of help, and teachers’ responses take the form of grades instead of suggestions of ways to solve a reading or writing problem. Our studies show the role of teacher-as-evaluator as permeating almost all classroom exchanges involving reading and writing.

5. **Internalization.** As students gain competence in new tasks, control of the interaction is gradually transferred from the teacher to the students. External scaffolding for the activity is gradually withdrawn as the new patterns and skills become part of the students’ own repertoires. As Cazden (1979) and Griffin and Cole (1984) have pointed out, we are dealing with a peculiar
kind of scaffold, one that self-destructs as the child internalizes its features, allowing the child to complete similar tasks without further help. Thus Richard, in Bruner’s studies, eventually took over the labeling sequence in picture-book reading, just as the older children in Wertsch’s analyses embedded the parents’ directives in their speech to themselves.

In their instructional practices, teachers too often forget to let the scaffolding self-destruct. Rather than allowing students to take over control of the task, teachers perseverate with their favorite teaching practices. In one part of our study of writing instruction, we analyzed popular textbooks in seven subject areas and found that there were few differences in the writing activities suggested between 9th and 11th grades, and no differences in the kinds of activities suggested over the course of a year in individual texts (Applebee, Langer et al., 1984). There was no transfer of control from teacher (or textbook) to student in response to the learning that was presumably taking place.

While we have not elaborated here on the content of the instructional interaction, in any given case the nature of the scaffolding will be shaped by the particular learnings that are needed in order to accomplish the larger goal. In most cases, this will involve both particular content knowledge necessary to carry out the task, and particular reading or writing strategies or approaches necessary to carry it through. And it will be toward the accomplishment of the overall goal that the instructional interaction will be initiated: one or more different kinds of knowledge will be taught in the service of achieving a particular goal. These teachings will have meaning only as they enable the student to move toward accomplishing the goal. In this way, the student can learn (1) new knowledge and (2) new strategies, as well as (3) an understanding of how these are coordinated in the completion of particular tasks. For this to occur, the student must have a clear understanding both of the task itself and of the strategies that are being used to complete it.

**REINTERPRETING STUDIES OF TEACHING METHODS**

Process-oriented research has come into its own in the past decade, but the bulk of that research has been concerned with cognitive aspects of reading and writing, rather than with the study of instruction, of ways in which those processes can be taught and learned. In the 5-year period 1981–1985, for example, 72% of the articles in *Research in the Teaching of English* dealt with reading or writing, but only 10% discussed alternative methods of instruction. Although the teaching literature has been full of instructional suggestions, the research base for those suggestions is meager at best.

If we consider the instructional studies in terms of the five components of effective scaffolding suggested earlier, virtually all of the recent studies have been concerned with one or another aspect of structure—that is, with the sequence of activities that are provided to support students while engaged in a reading or writing task. Although none of the instructional studies were
designed to test the scaffolding model directly, their results are generally consistent with the prediction that tasks that lead students through “a natural sequence of thought and language” are more likely to be effective in the development of new skills.

Some examples follow, selected to illustrate how recent research can be reinterpreted in light of the argument we are developing, rather than to provide a comprehensive review of research on reading or writing instruction.

Hillocks (1979, 1982), in a pair of studies, has examined the effectiveness of a series of observational activities as a prelude to writing, in contrast to more traditional approaches to writing instruction. Essentially, his observational condition leads students through a structured process of observation, recording, and reporting, accompanied in the second study with revision and teacher-response conditions. The sequence of activities in his experimental groups matches our criteria for effective scaffolding rather well: the task has a clear structure with activities that are designed to help students accomplish tasks that they could not successfully complete on their own. The students have room to develop some ownership for what they are doing, since the tasks focus on their own observations rather than a recitation of information previously organized by the teacher. In general, the experimental groups in Hillocks’s studies outperformed the controls on posttreatment tasks that required specificity and organizational skills paralleling those in the treatment tasks. Hillocks’s studies are limited to one type of writing, but come the closest to offering a test of a well-constructed sequence of instructional scaffolding in the teaching of writing.

Other studies have examined smaller segments of the total writing activity. Glynn, Britton, Muth, and Dogan (1982) compared the effects on persuasive writing of different demands while writing a preliminary draft. In general, their results suggest that, for a complex task like persuasive writing, freeing the students during their early drafts to think about the arguments, rather than about the form of their presentation, simplifies the task for them and leads to a more effective generation of arguments. This approach may also represent a more natural sequence of thought and language than that enforced by the control conditions, which insisted (as teachers so often do) on mechanical correctness and completeness even in the preliminary drafts.

Beach (1979) compared the effects of teacher response, no response, and self-guided response on between-draft revision of expository writing. Teacher-guided revisions were more extensive, and also led to better final drafts, a result that would be predictable if we assume that it is difficult to obtain enough distance from one’s own writing to assess where revisions are most needed. Karegianes, Pascarella, and Pflaum (1980), in a small study of low-achieving 10th-grade students, found, on the other hand, that peer editing led to better performance on posttreatment essays than did teacher editing. (Peer editors used the same editing/rating sheets as were used by the teacher.)
Both groups of students improved, which is consistent with Beach's results. However, in this study, the greater improvement attributed to the peer-response condition could have had a number of sources. For example, the process of reading other students’ papers may have heightened students’ understanding of the process of revision; sharing with a wider audience of peers may have increased the writers’ sense of ownership for their work; and the peer-editing group may have been perceived as more collaborative and less evaluative than the teacher editing. Quite likely a combination of those factors was at work.

One of the largest bodies of recent work in writing instruction has examined the effects of sentence combining on writing proficiency. Sentence-combining programs violate two of our principles of effective scaffolding: they are essentially skill practice out of context, and they provide little opportunity for the student to develop ownership of the task.

It is clear that sentence-combining practice leads students to produce more complex sentences. It is much less clear, however, that students write better as a result of such programs. Smith and Combs (1980) found that simply cuing students that sentence complexity will be a factor in assessing their writing leads to comparable increases in complexity. Equivalent gains were obtained from overt cues that stated the criteria and from covert cues that were conveyed, for example, by putting the students through a brief sentence-combining exercise. Although younger students may not be able to vary the syntactic complexity of their writing as easily as did the college students whom Smith and Combs were studying, it is quite possible that the effects of sentence combining on writing quality have as much to do with clarifying students’ sense of the task as with their more general writing abilities.

Beck, along with her colleagues at the Learning Research and Development Center, has conducted a series of studies focusing on reading instruction, using basal-reader passages. In one of the most recent studies, McKeown, Beck, Omanson, and Pople (1985) examined successful vocabulary instruction to fourth graders by comparing three types of instruction: traditional instruction using teacher-directed simple associations, rich instruction that engaged the students in exploring various aspects of word meanings for themselves, and extended/rich instruction that included the rich instructional activities but also encouraged the children to become aware of and use their new words in out-of-school contexts. The words selected for inclusion corresponded to those introduced in basal readers during the intermediate grades. Dependent measures were vocabulary knowledge, semantic decision (interpretation of words in context), and story comprehension (recall of stories created around high-encounter and low-encounter words).

The rich and extended/rich instructional environments seem to capture critical aspects of instructional scaffolding in that both conditions permit the students to develop a sense of ownership for the task by encouraging discussion.
about the students’ own meanings. Both also provide a supportive structure in the form of vocabulary-building routines for the students to follow and internalize.

In general, the three groups performed equally well in vocabulary knowledge, but the children in the rich and extended/rich conditions excelled in high-encounter story recall. They also performed their tasks more quickly. The richness of instruction, the authors conclude, provided the students with an opportunity to integrate words and elaborate them in diverse contexts. The extended/rich condition provided them with the opportunity spontaneously to establish even more semantic connections outside of class. We would elaborate these interpretations by conjecturing that the students in these instructional conditions had the opportunity to first use their new vocabulary in social settings that permitted them to move from the meanings they set for themselves toward the more refined definitions they were learning. Further, they had an opportunity to practice their growing understanding of the new vocabulary in social settings where tutorial support was provided to help them understand and use their new learning on their own.

Duffy and Roehler, at the Institute for Research on Teaching, have undertaken a series of studies that look at the effects of instructional explicitness on student achievement. In one recent study (Duffy, Roehler, & Rackliffe, in press), they examined the influence of six teachers’ instructional talk during reading lessons. They found that while all the teachers with whom they worked were verbally explicit, some made qualitatively different statements about what was to be learned and how to go about learning, and it was their students who demonstrated a better understanding of the lessons’ contents. These teachers were responsive to “where the students were” in their attempts to learn and provided various forms of assistance to help the students understand and complete new tasks.

Analyses of postlesson interviews with students demonstrated that explicitness is a relative term, and the way it is actualized in the classroom makes a great difference in student learning. Duffy, Roehler and Rackliffe conclude that for effective instruction, teachers need not only to be clear about the topic of the lesson, but also to understand the processes good readers go through, and then to offer explicit help based on this understanding.

The behaviors of the successful teachers in this study closely parallel our scaffolding criteria of structure and collaboration. Not only did the teachers understand the natural sequence of language and thought engendered by the activity, but they also served as watchful guides and tutors. They helped students to gain increasing understanding of the nature of the reading activity, and increasing control in carrying it through on their own.

We have cited only a few studies in this section. This is not because of space constraints but because of the dearth of studies that directly focus on literacy instruction: on the roles of teacher and student in the joint enterprise
of learning to read and write. However, from these few studies, each quite different in approach and focus, we have been able to demonstrate that the more successful instructional approaches incorporated at least some aspects of the theoretical notions underlying instructional scaffolding.

CONCLUSION

Where does that leave us? We can reorganize and make sense of what we know about reading and writing instruction in terms of the more general principles of language learning processes. That, we think, is ultimately the most productive view, both in defining the research questions we ask in the next generation of reading and writing research, and in helping us to formulate our response to the inevitable questions about what research can tell us about what to do in the classroom tomorrow. Our concern with reading and writing processes has taught us a great deal about the role of the individual; the concept of instructional scaffolding provides a way to bring the role of the teacher, and of instruction, back into our research paradigms—and into our theories of learning to read and write.

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