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ABSTRACT

Unproven beliefs about the process of reading and its instruction and about the effects of maturation and social structure on learning have obscured the question of what children know about how to read. An alternate conceptualization proposes that to learn to read children must obtain experience in three reading contexts: the use of print and its relationship to oral language (function of print), the rules for relating print to speech sounds (form of print), and the procedures for engaging in the act of reading and for discussing with others what one has read (conventions of print and procedures for instruction). This theory predicts that children need opportunities to learn about all three major systems to learn to read. Results from a test of the theory on young children who had no idea how to spell words, knew no words, and could barely recognize letters indicated that informal or formal instruction using letters, picture cards, printing, and story reading tasks could acquaint children with some of the functional and conventional contexts for reading. Experiences of recognizing words and identifying signs helped children figure out how print was meaningfully related to language, events, and objects. Furthermore, experiences of reading, discussing story information, and rereading stories provided them with a clearer understanding of how one held a book and what to look at when trying to read a story. (HOD)

CENTER FOR THE STUDY OF READING

Technical Report No. 267

ACQUISITION OF KNOWLEDGE ABOUT READING: THE PRESCHOOL PERIOD

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Abstract

The advent of knowledge about reading is considered from a longitudinal perspective, with a review of research on preschool children's attempts to read. A three-strand construct of prereading is hypothesized which is oriented toward the child's view of reading and its social and communicative value. The proposed construct, which is supported by descriptive and reading research, has specific and general implications for instruction.

Acquisition of Knowledge about Reading: The Preschool Period

Think back to your childhood. Do you have a memory of when you learned to read? Many of us do. When we ask this question to those who have a distinct memory about when they learned, we find that it is often tied to a particular book. For some it was Beatrix Potter's book, Peter Rabbit. Of course, we have no idea now whether it is an accurate memory or on what conception of reading it is based. Did we actually learn to read through the book or were we reciting it from memory? Did we learn to read at home or at school and did it happen gradually or all at once? These are questions none of us who have such memories can answer. And, while it is difficult to gather information about children's initiation into reading, it is undoubtedly necessary to look more closely at children's prereading conceptions if we are ever to understand how children begin learning to read.

What does a typical child know about reading before going to school? This would seem to be a reasonable question. Yet it is one that is fraught with hazards, influenced not as much by research as by the implicit models we have of reading and by the hidden assumptions we make about how children learn. We will describe three hazards so readers will understand how and why the question has been difficult to answer. Following this we will propose a formulation of the answer.

One hazard is that answers to the question are affected by our views of how reading takes place, and extrapolating from that, how it should be

taught. Unfortunately, the field is not in agreement, first, about how reading occurs and, second, about how to teach children to read. Look, for example, at the number of alternative programs purporting to show effective ways to teach beginning reading (Aukerman, 1971). How can a curriculum supervisor or teacher distinguish among them to choose the best program? One way is to classify them first in terms of their assumed reading processing model. Then it is apparent that most can be represented by one of two processes; within each, differences are primarily procedural (for example, on a procedure for introducing letters or sounds).

Many programs rely on a model of reading in which the beginning reading process is assumed to have a linear quality. The more strictly organized of these are called code-emphasis programs (Beck, McKeown, & McCaslin, 1979) or lingistic programs (Chall, 1967). Proponents of this model, as evidenced from the quotes below, emphasize that the process is initiated with letters, words, or their sounds and then proceeds to larger units of text.

> Once a child begins his progression from spoken language to written language, there are, I think, three phases to be considered. They represent three different kinds of learning tasks, and they are roughly sequential, though there must be considerable overlapping. These three phases are: learning to differentiate graphic symbols; learning to decode letters to sounds; and using progressively high order units of structure. (E. Gibson, 1976, p. 254)

> In the information-processing approach that we have proposed, reading involves the successive recognition of larger and more abstract meaning . . . from the recognition of word meaning to the recognition of the meaning of phrases, sentences and stories. (Venezky, Massaro, & Weber, 1976, p. 695)

> . . . the transformation of written stimuli into meanings involves a sequence of stages of information processing. (LaBerge & Samuels, 1976, p. 551)

On the other hand, there are programs that assume that the reading process, as well as its instruction, is not linear but interactive and tightly bound to meaning. Some basal reading programs from the 1940's, and 1950's (those which featured a whole word approach to beginning reading) and, more recently, language experience programs follow many characteristics of this model. In the next quotes, notice the assumption that reading instruction must be formed around understanding and interpreting text.

> Reading is a psycholinguistic guessing game. It involves an interaction between thought and language. (Goodman, 1976, p. 498)
>
> . . . a child learns to read by reading. (F. Smith, 1980, p. 421)
>
> If learning to read and write is to constitute an act of knowing, the learners must assume from the beginning the role of creative subjects. It is not a matter of memorizing and repeating given syllables, words, and phrases, but rather of reflecting critically on the process of reading and writing itself, and on the profound significance of language. (P. Friere, 1980, p. 369)

The viewpoint described by the first set of quotes is usually interpreted to indicate that reading has a hierarchical nature. The second emphasizes the interaction between meaning or language and print. A problem with the first viewpoint is that, while the research does indicate that our eyes read and process very small bits of text at a time (see, for example, McConkie, 1982), it can neither be assumed that the young child reads in the same way as an adult nor that the most effective instruction is to recognize first letters, then words, then larger units of text. Letters have no intrinsic meaning and words out of context carry very little of

their intended meaning (Anderson & Ortony, 1975; Bollinger, 1965). Further, being able to identify printed words is not sufficient evidence that appropriate context-derived meanings are identified (Mason, Kinseley, & Kendall, 1979). A problem with the second viewpoint is that it lacks a clearly formulated instructional approach. As a result, perhaps, the field of reading, particularly beginning reading, is more influenced by a hierarchical model of reading than by one that focuses on its meaning.

While the instructional issue has not been resolved, it can be hedged by taking great care that teachers encourage text understanding and interpretation. More specific changes await evidence from long-term investigations of young children's developing knowledge of reading. By tracking change, first during the preschool period when children are in greater control of what and how they learn, and then extending into the schooling years by getting information from children about their reading activities at home, it might be possible to separate school instructional effects from informal learning effects. Mason (1980) and Söderbergh (1977) found that children typically demonstrate an early awareness of print that is centered on highly meaningful words in context and is followed by active attempts to spell words and to categorize words in terms of their letter sounds. Bissex (1980) and Hiebert (1981) found that an interactive approach to reading and writing is maintained. Work of this nature needs further documentation in order to learn whether one or both viewpoints about the reading process need to be modified.

A second hazard to answering questions about what a child knows about reading before going to school is found in assumptions about how children learn. Despite research to the contrary (for example, Brown, 1975; Chi,

1976), many educators appear to believe that what children learn or are able to learn is profoundly limited by their age or maturity. The field of reading particularly has been influenced by statements that focus on effects of the chronological age or mental age of the child. For example, a long-standing statement is that "the age of six is the crucial age" for learning to read (Judd, 1918; Morphett & Washburne, 1931; Heffernan, 1960; Hildreth, 1950). Further, research from the 1920's and 1930's often emphasized how intellectual endowment affects the age a child can learn to read (for example, Cox, 1926; Davison, 1931). What they and others since have failed to study in the same depth is the role of home background experience in learning to read or early schooling in reading to children under the age of six.

Another dimension of the maturational assumption is its tie to the belief that early instruction may harm children. Here, for example, is the way Gessell stated the issue:

> The attempt to force reading [by the age of six] frequently leads to temporary or permanent maladjustment and more or less serious disturbance in the course of normal school achievement. (1940, p. 208)

There is no evidence for the assumption that children have an inner biological timetable that dictates when they can learn to read or even an optimal time to learn (Coltheart, 1979). Furthermore, Clay (1972) argued that waiting for the "late bloomer" to want to read can damage children because effective instruction may then be delayed for too long. Despite this more current evidence to the contrary, some parents and preschool teachers are still wary of teaching young children about reading.

A maturational view can be confused with a belief that instruction should be modified to meet individuals' different needs. Children who don't play well with other children, cling to the teacher, or seem to have short attention spans, may be called "immature," and presumed to need social experiences rather than reading experiences. Children who enter school with substantial knowledge about reading may be considered ready to receive a reading instruction emphasis while those with less knowledge may be presented with non-reading activities such as coloring, counting, matching pictures, or classifying objects. The supposition that social expertise and cognitive tasks must precede or prepare children for reading is at the base of these individualized instruction practices. Unfortunately, effective prereading or reading instruction may as a result be omitted for children who most need it.

To countermand beliefs that children's instruction ought to be based on their maturational level of development, knowledge about reading needs to be shown a function not only of natural endowment but of various experiences of being read to, of learning letters and having signs and labels identified, of printing and spelling letters and words, and of learning that reading and writing is both meaningful and useful. In addition, greater use of domain-referenced prereading tests, which can provide a clearer understanding of differences in kindergarten and first grade children's entering knowledge, should allow teachers to tailor their instruction more closely to children's competencies.

A third hazard to answering questions about what preschool children know about reading stems from the extent to which we believe that differences among children are more a function of individual achievement than of the social environment or culture (see Resnick, 1981, for elaboration

of this point). In planning educational programs, we rely on instructional procedures that fit the dominant social classes and culture. We stress, for example, individual effort over cooperation, adult-monitored learning over peer learning, and tutorial-type learning interactions over group participation. Alternative learning interaction patterns are seldom studied. Moreover, we seldom consider that minority culture children are, in effect, penalized when they are asked to learn using majority culture social structures (Collins & Michaels, 1980; McDermott & Aron, 1978). As a result, we seldom study improvements in learning under conditions where the social patterns are more familiar (Au & Mason, 1981). Because of the large number of adjustments all children must make upon entering school, the apparent lack of a theory about how social environments shape learning and its expression probably means that our schools are not meeting the needs of lower class and minority-culture children. This is an issue that must be addressed in future constructs of learning to read.

Further information about what children know about reading will require comparisons of its use at home and community with its presentation in kindergarten and first grade. We must find out not just how middle class children understand and are dependent upon printed information but how other groups understand and use it. How is printed information utilized for daily living, working, learning, and recreation among families from various social classes, cultures, and geographic areas? How well is home reading matched with school reading activities, materials, and procedures? What kind of support for reading and writing is there in these diverse communities to build on for helping children read and to what extent do

schools rely on community support systems? These are some of the questions that need to be answered in order to make effective use in school of the community support systems.

To summarize our position: the question about what children know about how to read has been obscured by beliefs about the process of reading and its instruction, about the effect of maturation on learning and about the influence of social structure on learning. We can and must consider how these beliefs have limited our understanding of what children know about reading before they go to school as well as our attempts to establish effective instructional practices.

The Theory

We propose an alternate conceptualization about prereading and beginning reading that is concerned with what children understand as they learn to read and how their understanding is modified through reading and instruction. That is, it is couched foremostly in terms of the learner's understanding rather than how the expert reader processes print; it studies the role of experience rather than maturation; and it assumed that school success stems from social knowledge about how to interact with teachers as well as cognitive knowledge about how to decode and interpret text.

We propose that to learn to read, children must obtain experience with three reading contexts: the use of print and its relationship to oral language (function of print), the rules for relating print to speech sounds (form of print), and the procedures for engaging in the act of reading and for discussing with others what one has read (conventions of print and procedures for instruction).

Each context enjoins a conceptual system comprised of several related strands of information about what and how to read. For example, the form of print context involves learning to recognize print and name letters, recognizing consonant sounds and vowel patterns in words, and spelling simple words. Because this information is affected by incidental or informal as well as planned or formal instruction, its order of acquisition is not invariant; it can be influenced by unique experiences as well as by intensive training (for example, letter sounds could be learned before letter names). However, each context is assumed to contain layers of related information that are seldom taught but are typically acquired through similiar experiences. For example, children who are read to at home also learn procedures for holding and reading books. It is also supposed that there are more effective or more efficient orderings of instruction. For example, early experiences in printing and naming letters probably facilitate letter sound learning. The rationale for the notion of orderly acquisition stems from descriptive studies (Bissex, 1980; Mason, 1980; Söderbergh, 1977) and from the assumption that an early conceptual knowledge of wordness underlies abilities to read and to spell (Clay, 1972; Ehri, 1978; Hiebert, 1981, Holdaway, 1979; Morris, 1980).

Contexts for Reading

Function of print. It can be supposed that information about the function of print is initiated through informal, often incidental, occasions of linking print to familiar meanings. This means that children begin to learn how print has meaning and how it can be inferred from its context principally through unsystematic and idiosyncratic experiences.

There are innumerable ways for that to occur. Children can hear TV announcers emphasize a product name and see the printed label displayed on the screen. They could hear a parent announce a trip to a particular store and, accompanying the parent, see the store name displayed in bold letters. The place where a relative works could be pointed out and named. A parent might choose a labeled food product from a grocery or kitchen shelf and name it or even point out the word on the label. Children's own names might be printed for them. Road signs are likely to be pointed out, book titles may be referenced and words in stories may be identified.

The unorganized nature of such experiences suggests that the development of functional constructs is derived primarily from children's own conceptualization of how and why print is used. What concepts children form is thereby affected by the amount of print that exists in their environment, by the use to which print is put by significant others, by the clarity with which the experiences they have in reading signify meaning, and by the extent to which they obtain opportunities to test their ideas and identify, interpret, and use printed information.

Reading, printing, and spelling experiences help children to segment their speech into units that correspond to printed words. This may be similar to early language learning when children begin to recognize word separations in the stream of speech that correspond to meaningful objects and actions. However, it may be more complicated than language learning because we do not utter function words distinctly and we often do not name objects as they are labeled on packages or read books as they

are exactly written. For example, on my kitchen counter were two bags of fruit. One said, "TEXAS GARDEN CITRUS"; nowhere on the package was the word, "grapefruit." Similarly, the bag of apples was labeled, "Belle of Belding." Often, then, the words we use to label products are either not there or are in smaller letters than the product name. Further, stories are not necessarily read to children as they are written. In one of our surveys, one third of the parents reported that they sometimes "tell" the story instead of reading it. Hence, children might form erroneous impressions of how to interpret print (see Bissex, 1980, or Holdaway, 1979, for examples). Yet if adults are aware of these problems, and if children have many opportunities to try to read, it is clear that many do learn. For example, in data being analyzed by Mason and Wong, kindergarten children were asked to read words on labels (e.g., Jello, Coca-Cola, baby powder, crayons). When the word included the picture, the average score was 97.5%; when given without the picture it was still high, 79.1%. Thus, even though some printed words are seldom referenced in our labeling and others are hard to find on the object or package, it is apparent that many words particularly signs and labels (own name, names of important people and objects, food labels, and explicit signs such as STOP) are learned before children go to school. They indicate children's beginning acquisition of the concept that print represents meaningful ideas and objects.

Form of print. A second system of print is its form and structure. Initiated by learning to name and recognize letters, it seems to be centered at first on letter shapes and letter distinctions; later it extends to letter-sound recognition. However, because the structure of

our grapho-phonological system is so complex, children are often helped to learn this system by parents, the community, and preschool teachers. One way is our introduction of the alphabet with alphabet posters, alphabet blocks, alphabet books, alphabet cereal, alphabet cookies, alphabet soup, etc. Many of us also teach an alphabet song and encourage children to watch the TV program (Sesame Street) that features letters. Such a concentration of letter information enables most children to recognize, name, and begin printing letters before they reach first grade (we found, for example, an upper case letter naming mean of 90.7% and lower case mean of 85.4% in the Mason & Wong study). As children learn letters, they figure out what counts (shape, not size, and direction of lines, not color) (Gibson, Gibson, Pick, & Osser, 1962), and learn that each letter can be represented in somewhat different ways. Children usually recognize upper case letters before lower case letters, probably because these are what they see on signs and labels (Olson, 1958; McCormick & Mason, 1981). Some children become aware of the relationship between letter names (or taught letter sounds) and the phonemes or distinguishable sounds within words (Bissex, 1980; Chomsky, 1979; Clay, 1972; Morris, 1981; Paul, 1976; Read, 1971; Söderbergh, 1977).

The fact that there are substantial individual differences in acquisition of letter knowledge (a wide range of scores on a letter name task is typical; see Calfee, Chapman, & Venezky, 1972; de Hirsch, Jansky, & Langford, 1966; McCormick & Mason, 1981) suggests that some parents play an important role here while others provide much less help for learning letters. For example, in the Mason & Wong study, 106 (52%) of the

children correctly named all 10 lower case letters we gave them. Twenty children knew fewer than 6 letters and 7 could name no letters. In a spelling task, 68 (34%) correctly spelled 4 three-letter words; 84 spelled half or less, and 16 could not identify a single letter in the words. However, only 6 children knew more than half of the vowel digraph and vowel/silent e patterned words they were asked to read. Thus, depending on the extent to which parents support naming of letters, spelling and word reading, children can develop a fairly deep understanding of the role of letters and letter sounds in producing words before entering first grade.

Conventions of print. A third system that needs to be understood deals with conventions for reading. Through social interactions with others, through book reading, printing, and schoolwork exercises, children learn how one is supposed to report or talk about what one has read and how to carry out reading and reading-related tasks.

One set of conventions surrounds how to talk about reading to a teacher. This not only demands substantial oral language competence but also familiarity with the social interaction rules. Since the rules are seldom stated, learning to interact properly is not necessarily an easy matter. The implicit social rules used in classroom lessons have only recently been described by researchers (Au & Mason, 1981; Boggs, 1972; Cazden, in press; Collins & Michaels, 1980; Mehan, 1980; Philips, 1972; Sinclair & Coulthard, 1975). What appears to make many of these interactions hard or easy is the degree of cultural congruence between teacher and student. When the teacher and students are from differing social classes or cultural groups, smooth communication patterns are often disrupted. The children in such situations have an additional learning burden.

The other set of conventions are those related to the act of reading or of doing reading-related tasks. It includes: (1) knowledge about how to hold a book, turn pages, and direct one's eyes while reading; (2) knowledge of terminology such as book parts (e.g., front, page), location terms (top, bottom), actions (make a circle, underline), size (a big or little word), and reading words (letter, word, sentence), and (3) knowledge about rules and procedures for school tasks such as reading, printing and writing, spelling, phonics exercises, and test taking. Early manifestations of knowledge about book handling may usually be acquired thorugh reading and rereading of books (Chomsky, 1977; Holdaway, 1979; Smith, 1980). Procedures for reading stories, writing, and spelling, when encouraged by parents and preschool teachers, are moderately well developed without instruction (Bissex, 1980; Clay, 1972; Ferreiro & Teberosky, 1981). Procedures for carrying out phonics exercises and answering reading test questions have not to our knowledge been tested but probably are not usually learned until children enter school.

The theory predicts that children need opportunities to learn about all three major systems to learn to read. The function of print is learned by establishing context-formulated procedures for relating printed information to oral language and refining an understanding of wordness in print form. Concurrently, or somewhat later, depending on the extent of support from adults for letter activities, the form of print can be acquired in its rudimentary form based on children's own analysis of words into letters, spelling patterns, and letter sounds. In addition, knowledge about conventions of reading, how to talk about reading, and how to do school reading tasks are acquired through reading and writing activity. Of course, as

children receive formal instruction in school, they modify and expand their earlier constructs. Nonetheless, the theory predicts that because there is so much relevant information about reading that can be figured out before being required to learn letter sounds and words, children who arrive in school with some information about the form, function and conventions of print will be in a better position to excel under more formal instruction. They are likely to understand and learn from the kinds of school tasks they are asked to carry out. Those who come to school with little or no knowledge, particularly about the function and form of print, will have grave difficulty in understanding most school reading tasks. Finally, those who lack experience with conventions that are typically found in instructional interactions could easily be misjudged by the teacher regardless of their knowledge of function and form. Hence, children need to be acquainted with some of the concepts in all three systems before being required to carry out reading tasks in school.

Acquisition of Reading

The theory additionally proposes that learning about reading is best explained in terms of changes in young children's conceptualization about the form and function of print. Three levels of reading are proposed (Mason, 1980).

Level one. At first, reading is highly dependent on its picture or location; from the child's perspective, looking at or remembering a word may be no different from looking at and remembering a picture. Consequently, an ability to recognize words that appear, for example, on traffic signs, packages, labels, billboards, and signs need not mean

that the child realizes that printed words can retain form and meaning while changing their locations. For example, children at this level typically can recognize the word STOP on a picture of a stop sign but not elsewhere. Further, they do not necessarily realize that words retain particular labels. For example, several 4-year-olds in one of our studies learned to recognize the printed word rabbit, but 15 minutes later called it "bunny." Finally, although they frequently learn to name letters, they do not know how to use them to spell or remember words. For example, when we ask them to "make the word 'cat,'" their typical response is to pick out the letters (usually all of them) in a random order and place them in a straight line. However, they will report that they "know that letter 'cause it's in my name." When shown how to sort words by initial letters or by picture, they remember more words that had been placed with pictures (Mason, 1980). Thus, at this level of development, children's strategies for reading are so inadequate that remembering printed words is a slow, relatively ineffective process.

Level two. At some point in children's exploration of print, which occurs after they learn to recognize and name alphabet letters (McCormick & Mason, 1981), they begin to realize the tie between letter sounds and word sounds. They notice that words start or end with sounds that they can relate to letter sounds or names. When asked to spell "cat," "stop," "top," or other short words, for example, they whisper the word to themselves, at first picking only consonants that match the sounds they hear. They recognize "stop" out of context. They print their name or part of it, and they use their meager knowledge of letter sounds to try to read new words, usually by picking a word that matches the first consonant of

printed words. We believe that these characteristic actions signify an important change in viewpoint, a higher level of understanding of how to read. When children begin to employ these strategies, they are reorganizing their conceptualization of print and of how to learn and remember printed words. They are shifting to a Level Two conceptualization in which letter-sound relationships instead of unique configuration cues predominate. Since it is a more accurate understanding about print, they can now differentiate among some similarly spelled words, learn a larger number of words and more quickly, make quite reasonable guesses about spelling short words, and sound out some words they have never seen. However, as documented by Biemiller (1970), Bissex (1980), and Söderbergh (1977), their orientation at this level of development to letters and sounds is still inadequate, as they sometimes seem to pay inordinate attention to letter sounds and ignore context cues. While they know some phonetic principles, they cannot identify vowel patterns through the use of clusters of letters (e.g., ight, ire, ill, ai) (Mason, 1976, 1977). Some leave out vowels, try to use one vowel in spelling, or recognize only words containing short vowels. Others mix up s with c or c with k when trying to spell and become completely confused when trying to recognize words which violate the major letter-sound patterns (e.g., said, there, one, was).

Level three. Another shift in understanding is needed to enable children to recognize more complex word and syllable patterns through "analytical reading of graphemes" (Söderbergh, 1977). Extensive experiences in reading and writing, mistakes in reading and spelling corrected by adults, as well as phonics instruction appear to help children begin to notice the repetition of ending sounds in words (e.g., seed, need, feed),

the possibility of manipulating letter sounds in words (a child reported that to write look, replace the b in book with l; example from Bissex, 1980), and the regularity of vowel digraphs and diphthongs patterns. Children's conceptual shift to Level Three involves a realization that a single-letter, single-sound rule system must be replaced by a letter cluster-to-sound analysis and a use of sentence context cues. Children begin to hold a more flexible view toward letter-sound relationships, being better able to recognize words that have unique patterns as well as those which display regular patterns. They recognize a large number of words in or out of context, make goods guesses about the pronunciation of new words, and will skip over unknown words in order to attend to text meaning. Level Three readers have acquired a sufficiently precise conceptualization of how to read that they can make rapid progress in reading and can read a wide variety of texts. They are becoming independent readers.

A Test of the Theory

If the theory presented here indeed reflects young children's typical progress in learning to read, then preparation for reading ought at first to emphasize the meaningfulness of print, ought to present Level One rather than Level Two concepts, and should rely on a child-involved, social interaction pattern structure.

To test the theory, we chose to work with children who were at the first level of development, that is, who had no idea how to spell words, know no words, and could barely recognize letters. We gave half the children only Level One tasks; the others received both Level One and

Level Two tasks. Level One tasks involved reading words in story contexts, reading or reciting and discussing stories, and discussing pictured words in terms of their meaning. Level Two tasks involved thinking of words beginning with particular letters, attending to beginning letters in words, and constructing pictures of objects that began with particular letters. Evidence of the force of the theory was to be obtained by measuring pre-training to post-training score changes, by contrasting parents' perceptions of their children's interst and knowledge of reading before and after our intervention, and by comparing the social interaction patterns between teacher and those children who received both Level One and Level Two tasks.

Method

Subjects. A group of 15 middle-class children attending a daycare center in a small city in Southern Illinois served as subjects in the study. All but one were Level One readers, as indicated by pretest information and parent interviews. The single Level Two reader, who was a kindergartener, participated in the lessons but was excluded from most analyses, including the social interaction analysis. Interviews with parents indicated that all parents had completed high school. Three of the mothers were college students, while the remainder were daycare teachers, salesclerks, or secretaries. Six of the 15 families were single-parent (mother only) households. The children ranged in age from 3 years 7 months to 6 years 5 months, an average of 4 years 4 months. Elven of the 15 children were only children (the average number of siblings was 0.3). Taking into account the one child who attended kindergarten, the average length of attendance at school or preschool was 17 months. Thirteen of the children were Anglo, and the remaining two were Black.

Materials. One parent questionnaire (Mason, 1980) contained 10 questions about children's knowledge about letters, words, and stories and about how to spell, print and name letters, and recognize words. Another set of 12 items measured parent support (whether children watch educational TV and discuss TV programs with parents, whether parents read to children, the availability of books at home, and opportunities for children to go on outings or to the library). The questionnaire was presented twice to parents to fill out at home, a week before training and then five months after training. The questionnaire was also given to a new group of parents from the daycare center the following year. A second questionnaire, which was administered to parents three weeks after training, contained questions about children's interest in the stories that had been taught to them: Is the child still interested? Does the child ask for books to be reread? Does the child read to self? Are there other signs of interest? Also, what aspects of print does the child seem more interested in (naming letters, printing, reading words, spelling, having stories read, or reading stories), and how does the parent read stories to the child (parent has child listen, parent points to pictures, parent points to words, or parent paraphrases rather than reads story).

A letter and word recognition test (Mason & McCormick, 1979) was given to the children before training, and the relevant subtests (picture-word matching, spelling, and letter naming) were repreated after the training. Further, before training the children were told a five-sentence story and after an intervening task were asked to recall the story. Free and probed recall scores were obtained by asking children

to retell the story and then to give specific details about the story. For the intervening task, called book words, they were handed a book upside down and asked to find its beginning, end, top and bottom, and to identify a word, a letter, and the next page. The children were additionally tested after training on their ability to print ("write something," "write a letter," and "write a word"), and on their ability when handed a new but easy-to-read story (a picture-phrase story about vehicles stopping at a stop sign) upside down to right the book and read the text.

Procedure. Children were tested and parents were interviewed at the beginning of the summer. Following this, the children were separated into four approximately equal groups in terms of sex, age, and letter and word knowledge. Two groups received word recognition and letter-sound training (Levels One and Two), while the other two groups obtained training which featured print meaning (Level One). Instructional groups of three or four children received 10 lessons, which lasted about 15 minutes each day for two weeks.

Word and letter-sound training. The teacher began by demonstrating how to print "the letter of the day." (The six letters presented during training were s t m p c b.) After the teacher named the featured letter, the children took turns finding the letter from a box containing many upper- and lower-case examples. The children practiced printing the letter on unlined paper with an example of the letter printed in manuscript form at the top. These are Level One tasks because they only require children to recognize or copy symbols. They were given in order to prepare children for the next, Level Two, task which was to find or sort labeled

pictures by their initial letters or to think of words that began with a certain letter and then to draw pictures of objects beginning with the letter. The final activity involved reading a simple 6-7 page story whose words featured the letter of the day. For example, on the day M was featured, the children read a story about "many monsters, making a mess, mixing mud, mashing marshmallows," etc. There were usually 2-5 words and an illustrative picture on a page. The teacher read a story through once (Level One instruction), but sometimes emphasized the sound of the featured consonant and pointed to the initial letters (Level Two instruction). Then each child, in turn, was asked to read a page from the story (Level One task) but was sometimes asked to point to the featured consonant as a word was spoken (Level Two task). After the first day of instruction the children were able to read one new story and reread at least one story during each lesson.

Print-meaning training. The teacher used picture cards and stories that the other groups had received but focussed on meaning rather than on letter-sound recognition. Children were presented with two pictures of labeled objects (pictures from advertisements) and asked which they would choose for a specific function as described by the teacher. For example, the teacher might ask, "Which would you use if you wanted to clean your sink?" A child was to find the appropriate pictured item. At the end of the game, the cards were handed back to the teacher with a child naming or describing them. For story reading, as with the other groups, the story was first read by the teacher and then each child, in turn, read a page. However, this group was encouraged to expand on or talk about the story rather than to pay attention to letters or sounds.

The last activity involved having the children draw a picture and then tell a story about the picture or, after being shown a label and hearing an opening statement, continue the story by describing what might happen next.

Results

Pre-post test differences. Testing determined that the children learned how to hold books and to read or recite the stories. During the pretest, only half the children righted the book that had been handed to them upside down while on the posttest all of them righted it. They all learned to read or recite most of the stories. Further, when asked to read a 13-word story they had never seen before, they were all willing to try to read it. The letter-sound trained groups profited from the letter printing instruction as they were better able than the print-meaning trained group to print letters and words.

Questionnaire results. Children's knowledge and interest in prereading was measured by two questionnaires. The interest questionnaire, given three weeks after training, determined that 13 children whose parents could be contacted were still interested in the six little books that had been duplicated and given to them on the last day of the training. Twelve of the children were reported to read the books occasionally or frequently (rather than seldom or never) to parents, siblings, or other friends, and were more interested in reading words at this time than prior to the training.

The other follow-up questionnaire, a repetition of the pre-training questionnaire, was handed out to the parents five months after training.

The twelve parents who responded showed no change in their support at home for prereading but a large increase in their estimates of their children's knowledge of prereading. Since it was conceivable that the increase in knowledge by the children was due to a natural developmental increase rather than to our training, we gave the questionnaire to a new group of parents from the same daycare center a year later. Their children were nearly the same age at the follow-up report time as those who had been trained. No differences between the untrained and pretrained children permitted the conclusion that the increase in the trained children's knowledge of prereading was due to our training.

Transcript analysis results. An analysis of the second lesson given to children who had received both Level One and Level Two training was used to test for instructional process differences. A second-by-second description of verbal and nonverbal actions of teacher and the children was transcribed from a videotape of the lesson. After repeated viewings of the tape and transcript, we chose three measures of teacher activity that could be reliably counted and that we thought captured the teacher's instructional intent: (a) number of explicit directives given to children to carry out a task; (b) number of implicit directives to carry out a task; and (c) number of teacher answers or clues given (or repeated) to a lesson question. Four types of student responses were counted: (a) number of correct responses to lesson questions (answers given simultaneously by more than child were individually counted because chorus responses represented individual effort); (b) number of response repetitions, which were correct answers already given by the teacher or another child; (c) number of no response, where nothing was said when an answer was requested by the teacher; and (d) number of wrong responses, when attempts by

children to answer were incorrect. Two raters separately tabulated these activities, settling any disagreements in conference.

The tasks are presented in Table 1 rearranged according to their instructional focus. Level One tasks at the top of the table are those which direct children to recite or read words in context, copy letters, or recognize them by name. Level Two tasks, which are below, are tasks which direct children to relate or match letters or their sounds to the first letter in words. The four children whose responses are categorized here are representative of the sorts of response made by other children and in other lessons.

Insert Table 1 about here.

The two types of tasks had strikingly different effects on the children. First, there were far more child responses with Level One than Level Two tasks (78 versus 30), and a greater percent were correct (79% versus 3%). Second, children remained silent or answered incorrectly far less often when the teacher requested a response to a Level One task than to a Level Two task (8 times as against 18). The poorer performance of the children with Level Two tasks could not be ascribed to fewer requests to answer. The teacher issued 27 explicit directives and 8 implicit directives with Level One tasks but made 47 directives with Level Two tasks. She gave help almost as frequently, giving a clue or repeating an answer on 56 occasions with Level One tasks and on 41 occasions with Level Two tasks. Since the children did respond to Level One tasks, we could not surmise an unwillingness on their part to talk. It appears instead that they did not answer and were unable to

profit from the numerous examples because the tasks dealt with a representation of reading that they did not yet understand.

The transcript analysis supports the prediction that Level One children can accomplish and learn from tasks which are oriented around their conceptualizations of reading. They can learn to label or name letters and words in the story. They can remember a story sequence by relying on picture information and help from the teacher. However, since to them reading does not yet mean analyzing words into letter sounds, relating letters to the initial phonemes of words, or stating exactly what is written, they cannot think of words that begin with a particular letter, they do not understand why they are drawing pictures, and they often modify the text as they "read."

The following excerpts from the lesson transcript of Level One and Level Two tasks exemplify children's ability to accomplish Level One tasks but not Level Two tasks. The transcript also displays how Level One tasks proceed more smoothly, have fewer interruptions by children, and involve errors that are closer to the right answer.

Finding t in box of letters (Level One)

T:	Look in there and find me a t. TO, you want to pick the first one?	Teacher leans box of letters toward TO.
TO:	(reaches in and takes a card labeled t)	
T:	Huh. Okay. Good boy. Okay AN go and then JE. Get a t outa there.	Teacher holds box in front of AN, leans toward her.
AN:	(takes a card with t)	
T:	Huh; good girl.	

JE:	(reaches in box, takes card)	As teacher moves box toward JE, he takes a card.
T:	There's some big ones and some little ones. Good, JE.	

Reading new story (Level One)

T:	TO, can you tell me what's this page? A teeny . . [tiny turtle	Teacher is asking children each to read a page of the new story. This is their first reading after the teacher had read the story to them. T holds book in front of TO.
TO:	tiny turtle]	
T:	And now it's AN's turn. Let's listen 'n see if AN can figure it out. A . . .	T looks up, turns page points to page, leans forward.
AN:	teeny tiny . . [frog	
T:	toad] Cause we want tuh. A teeny tiny toad. It's just like a frog. HUH. Okay, JE. Let's see. A . . .	T lifs head and looks at T. nods at AN. Turns page. T leans toward JE.
JE:	Teeny tiny cat	
T:	A teeny tiny . . .	
JE:	. . . tiger	
T:	Tiger, you betcha.	T turns page.
T:	What're they doin' Taking . . . Now it's KR's turn.	T points, holds book toward KR.
KR:	Tea.	
T:	Tea. Huh.	

Telling words that begin with t (Level Two)

T;	What else starts with tuh?	Teacher is asking children to think of words beginning with t. T taps TO on arm, looks at him. T leans toward AN.
TO:	(no response)	
T:	C'n you think a one?	
AN:	(no response)	

T:	Tree. And I bet JE knows. What's another one?	T looks over at JE. JE looks down.
JE:	Um . . .	
T:	What's on your car? A tire?	
JE:	(nods)	

Making pictures that begin with t (Level Two)

T:	And a train. Let's put a t there so we have a t	T, having directed children to draw pictures and label them with the letter t, is asking AN to label her train.
KR:	[for the train. But look!]	
	The t is going across there!	T looks at KR.
T:	Oh it's a gigantic t. Let's make--And what are you doing? Are you making a tree?	T leans toward TO, taps him on the arm.
AN:	[Or a turnip? T for--t, t]	
	t for [(inaudible)]	
T:	[And what is that?]	
TO:	A number.	
T:	A number? [A two?	
KR:	Hey I'm (inaudible)]	
T:	Is that a two? A t for two?	
TO:	(no response)	
T:	Okay, two.	

Discussion and Implications

Results from three sources--test data, parent report, and lesson transcript--provide converging evidence about children's first conceptualization of reading. Children who can name a few letters but have little

other knowledge about reading can be described as context-bound, label-naming readers. They can learn to recognize printed words in a story, they can name signs and labels and they can recognize, name, and print letters. They do not understand how to analyze words, identify letter sounds, or relate phonemes to letter sounds. As a result, instruction that features print meaningfulness and naming of familiar pictures or their printed labels can proceed smoothly, involve few errors, and engage children's interest and attention; instruction that is aimed at linking words and letters to word sounds can be fraught with errors and lead to disjointed or misinterpreted responses.

There are two important implications of our theory and the findings. The more obvious one is that informal or formal instruction using letters, picture cards, printing, and story reading tasks can acquaint children with some of the functional and conventional contexts for reading. Experiences of recognizing words and identifying signs help children figure out how print is meaningfully related to language, events, and objects. Printing experiences help them realize what it means to "write" a letter or a word. Experiences of reading, discussing story information, and rereading stories provide them with a clearer understanding of how one holds a book and what to look at when trying to read a story. Perhaps most important, these tasks give them the confidence to try to read in other situations. The effects suggest that effective prereading instruction can be that which ties print to meaning and to children's level of understanding about how to read.

The less obvious implication of this theory is that instruction which matches children's level of understanding also permits children to construct

their own strategies for learning about reading. If children are given opportunities to connect oral language and its meaning with print before they try to spell, write, and recognize words, to hypothesize how letters carry sounds that can be heard in words, then they may not become dependent upon teachers' constructs of meanings of words or sentences in stories or upon teachers' rules about letter-sound correspondences. However, if they miss the opportunities when they are first introduced to reading to organize their own ideas about word meaning and letter-sound patterning, we suggest that it could result in their accepting rather than trying out, taking the teacher's word rather than actively working out a concept. They might not try to construct word and text meanings by intertwining their own knowledge with the cues given by print. Moreover, they might try to memorize letter-sound rules rather than to develop increasingly more accurate formulations of letter-sound relationships. We believe, because so many reading concepts are complicated and require variable decisions as one reads, that it is necessary for children to learn how to formulate their own strategies for thinking about text meaning and to develop their own notions about the graphophonemic structure. Finally, we believe that these experiences can easily be provided before children receive formal schooling instruction, that is, at home and through informal programs at preschool centers or in kindergarten.

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Table 1

Instruction for Level One and Level Two Tasks

Tasks	Teacher Activity			Student Response			
	Answer or clue	Explicit directive	Implicit directive	Correct	Repetition	None	Wrong
Level 1 Tasks							
Identifying own printed name	1	6	0	3	0	1	1
Printing t	1		0	4	0	0	0
Finding t in box of letters	2	9	0	13	0	0	1
Reading of story[a] by teacher	19	0	0	-	-	-	-
First reading by children	12	4	0	10	0	0	2
Second reading by children	3	3	3	17	6	0	0
Review story first reading	10	5	1	5	2	0	1
Review story second reading	8	0	4	10	0	0	2
Level 2 Tasks							
Telling words that begin with t	9	10	0	0	3	6	0
Making pictures that begin with t	23	21	0	1	2	2	3
Pointing to t in words in story	9	16	0	0	6	4	3

[a]Each content word in the story that was read or repeated by the teacher was counted as an example. There were 16 content words in the new story and 10 content words in the review story.