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PRIOR KNOWLEDGE AND PREDICTION IN READING

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In order to understand how reading works and what reading is, it is necessary to look carefully at what readers try to do when they read. Many teachers have noticed that when pupils are confused by the meaning of a word or phrase, they will make a guess at it, sometimes to themselves, or publicly if reading orally. On what are these guesses based? Kenneth Goodman (1967), in his research on the nature and quality of children's predictions about the meanings in their reading called reading "a psycholinguistic guessing game". Prediction has become a more descriptive word than 'guess' about what the reader is doing, since he/she is making predictions on some rational basis. What is the nature of this rational basis for a reader's predictions?

Smith (1978) and others propose that reading is a psycholinguistic process which implies that the reader is continually seeking meaning by a process of reducing uncertainty. Smith (1975) also has noted the important role of prediction in reading. Prediction, he stipulated, is based upon the simultaneous use of at least three major cuing systems; the graphophonic, the syntactic, and the semantic. According to psycholinguistic theory, the reader uses previously internalized knowledge from these three systems in order to make predictions about the meanings embedded within the visual array on a page of print. Y.M. Goodman and Burke (1972) have demonstrated how the reader's attempts to predict meanings can be categorized by types of miscues, e.g., whether the prediction matches both the letter and sense of the writer's intent. To the extent that there is not an exact match, a miscue results. Y.M. Goodman and Burke have shown how to analyze the specific variations and thereby obtain insights into the reader's psycholinguistic processes in attempting to predict meaning(s). Tovey (1979) has shown

that many teachers do not adequately understand the concept of "miscue". They apparently think that readers cannot make miscues which may be graphophonically, morphologically, or syntactically variant and still be semantically acceptable; that is, conforming in spirit if not to the letter of the writer's intent in reducing uncertainty to obtain comprehension. Tovey concludes by noting that:

Miscues emerge as a reader becomes involved in predicting the thoughts of an author in light of his own particular thoughts and language patterns. Miscues enable a reader to apply his implicit knowledge of language (syntax) and his perceptions of his world (semantics) to the task of decoding print into meaning.

If teachers have difficulty in accepting the concept of "miscue", and correspondingly, the psycholinguistic view of the reading process, it may well be due to an inadequate understanding of the concept of prior knowledge on which much of the psycholinguistic view is based. Prior knowledge involves a reader's own language and his/her storehouse of facts and concepts. It is the psycholinguistic view that the reader uses this storehouse of language, facts and concepts to process language and comprehend meaning. Psycholinguistic research is concerned with the nature of this knowledge and the ways it is used in the communication process. What is prior knowledge then, and how is it used in making predictions in reading?

The Knowledge System and Ways of Knowing

Philosophical discussions about the character and growth of human knowledge date from classical antiquity. It is not the purpose of this paper to retrace these steps, but a look at recent developments may be in order. According to Hamlyn (1978), scholars have recently clustered around three positions; 1) empiricism, 2) nativism, and 3) developmental, biologically grounded structuralism espoused by Piaget.

Empiricism supports the idea that the "general" comes to be known by induction from instances of particular cases. These particular cases make themselves felt on human experience through the senses and ultimately, so goes the theory, become human knowledge. Associationist and behaviorist theories have provided a basis of support for empiricism in the past since the frequency and repetition of experiences were judged to be essential in the development of empirical knowledge. Indeed, B. F. Skinner (1958) proposed an associationist/behaviorist theory of language acquisition and development. In attacking Skinner's position, Chomsky (1959) argued for nativism--derived from the

eighteenth century rationalists and Descartes--proposing that human beings are born with "blueprints" of the language system and other systems of knowledge already existing in the brain. These "blueprints" pre-program humans to learn language and other forms of knowledge without the necessity of frequent repetition and reinforcement. Piaget (1915) has rejected both nativism and empiricism in favor of structuralism or what he refers to as "the third way." For Piaget, the human organism is always a self-regulating organism operating within a dynamic world of experience. Through the processes of accommodation, assimilation, and equilibration, the child interacts with the environment and thereby develops knowledge, intelligence, language, and moral character--more or less simultaneously.

Although it is certainly not possible to resolve the distinctions and contrasts between and among these theories of knowledge, it is an observable fact that the child does develop a knowledge system which he/she immediately puts to use in building meanings in the world. It is clear also that educators generally are increasingly interested in the work of Piaget. In addition, much of the now extensive research in child language acquisition supports a dynamic view of learning --with the child's growing sensitivity to language functions within the context of situation being a critical aspect of the language learning process. Piaget and the nativists seem to agree that the child uses knowledge to generate new knowledge, and the store of new knowledge integrated with what has come before becomes the prior knowledge for future growth.

Applications of Prior Knowledge in Reading

Beginning readers enter school with a vast supply of prior knowledge which they constantly use in building their picture of the world and learning from experience. Many textbook writers and editors assume that beginning readers have little knowledge of language or of print since so many series are written to "forcefeed" children bits of information about sounds, letters, and words. In actuality, most children already have considerable prior knowledge of the three cuing systems mentioned above. Here are some examples of the kinds of prior knowledge which children have on entering school, which they can and do use in making predictions:

The Graphophonic Cuing System

1. Most children have developed considerable competence in using their phonological systems by age 5. For example, most children of this age can produce all of the phonemes (significant sounds) of English and use them in context.
2. They are able to combine phonemes into a significant

number of free and bound morphemes (words and parts of words). For example, many have learned how to use derivational morphemes like un- and dis- to derive words like unselfish and dislike.

3. They are able to use inflectional morphemes like -s, -es, -d, and -ed to produce and comprehend plurals and past tense in English.

4. With regard to print, the child is only beginning to develop a consciousness of print and the fact that sounds can be represented by graphs in an array of print and that graphemes are printed units of meaning in the same way that phonemes are sounded units of meaning. Awareness of this sort comes from seeing printed symbols on television, on street signs, and in the supermarket, for example.

5. Some children will come to school already knowing that print in English orthography is arranged from left to right and that letters and words have certain distinctive configurations.

6. Some children arriving at school already have the knowledge that some letters occur more frequently in English orthography than others ("e" in contrast to "u" for example).

7. Some children will already know when they arrive at school that some letters always precede or follow other letters ("q" and "u" for example).

The Syntactic Cuing System

1. Most children come to school with some very precise knowledge of the syntactic system of their language. For example, they know that words have varied functions in sentences and therefore certain words or classes of words normally precede or follow other words ("the" usually signals a noun and therefore precedes it).

2. By the time they come to school most children have progressed through "telegraphic speech" or the two and three word grammar stage of language acquisition, and can construct many types of sentences which sound like those of adults. They can "transform" sentences into question (Can I have some milk?) and passive constructions (The man was bitten by the dog.), and many have developed the competence to embed one sentence within another.

The Semantic Cuing System

1. Function and situation link the syntactic system with the semantic system for the language user, since it is impossible to ask for "milk" at all unless one has developed the sense of "milk" in the real world, and an understanding that a sound or printed symbol is a reference to that sense. The semantic system incorporates the many meanings that a child knows and is one with the child's knowledge of the world. Neisser (1967) has shown how cognitive structure develops and how concepts are interrelated within

a vast network of meanings. Within such a structure, the child's meanings of "drink" "milk" "wet" and "food" are stored and cross-referenced with cognitive structure—another term for the semantic system.

2. When a child learns meanings he/she learns the pragmatics of meanings or where and when to use the meanings in the real world. Learning to suit one's language to the occasion is an important part of learning how to be meaningful ("is there any milk left?" actually means "May I have some milk?" or "Give me some milk" depending on situation.

At this point it is important to state the examples of prior knowledge given above, in fact, most of the knowledge within the child's cognitive system is implicit knowledge. It is knowledge that the child is using and developing but that he/she is unaware of possessing. Therefore, the child will be largely unable to answer questions about this knowledge, but will be able to use it instantaneously in communicative situations. As the child in school becomes a reader and writer, this implicit knowledge about language and print is used continuously to make predictions about the meanings encountered. New meanings are therefore integrated with old in a continuous process of growth and learning.

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