
Title	Building bridges: Strategies for increasing students' word power and reading comprehension
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Source	<i>ASCD (Singapore) Review</i> , 1(2), 12-17
Published by	Singapore ASCD

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Building Bridges: Strategies for Increasing Students' Word Power and Reading Comprehension

Good teachers will always be devising innovative ways to facilitate their pupils' learning. The most basic learning task, as well as the essential one that pupils have to master in order to become effective learners is reading - appropriately called "The First R". Because educators regard reading as of utmost importance, it is no wonder that the skill has received so much attention and generated such a large amount of research and controversy. The fact that there are so many conflicting points of view regarding how the reading act occurs and how reading is learned testifies to its complexity as a skill necessary for academic success.

What is Reading Comprehension?

Perhaps the most striking generalization that emerges from the literature is that research in reading has been rapidly shifting since 1965 from an atheoretical to a theoretical base with concomitant interest in developing models of reading and more adequately definitions of it. The implications of this shift for the teacher is that a clearer and better perception of the reading process and how it can be taught, are making the visions even more complex. The main arguments about how reading should be taught have been repeated over and over again as the decades pass, but still the problems remain. Psychologists, linguists and reading specialists believe that if we could understand reading we would understand the mysteries of the human mind.

For many years, reading specialists have attempted to define reading.

There is general consensus that reading involves the ability to construct meaning from printed symbols. Research in the past twenty years has enabled us to refine the definition further. A comprehensive definition of the reading process based on this research was developed by the state of Michigan in the United States (Wixon, Peters, Weber & Reober, 1987) and it goes like this:

Reading is the process of constructing meaning through the dynamic interaction among the reader, the text and the context of the reading situation.

Reading comprehension according to psychologists, linguists and reading specialists is "a process subject to the same constraints as human memory and problem-solving processes...as a reflection of the inner workings of the human mind" (Pearson and Johnson, 1978). Reading research seems to be shifting from an emphasis on trying to understand how a reader comprehends when he reads to trying to find ways of helping students understand what they read (National Institute of Education, 1976).

What is comprehension? In a word - understanding. Kintsch (1976) views the act of comprehension "as the decoding of texts into text bases". He goes further to say that "texts have no meaning in so far as they are derived from a meaningful message in one mind and produce a meaningful communication in another mind". Reading comprehension according to Pearson and Johnson (1978) involves "language, motivation, perception, concept development, the whole of ex-

perience itself". Olson (1977) defines comprehension thus:

Comprehension...may be represented by a set of procedures that involve selectively applying one's personal experiences or knowledge of the world to the surface structure of sentences to yield meaning. In so doing, one elaborates, assimilates and perhaps 'imagines' the sentence.

Another way of looking at comprehension may be to view comprehension as "building bridges between the new and the known" (Pearson and Johnson, 1978). By this metaphor is implied that comprehension involves drawing inferences and interpreting statements according to our perception of what is said or written on the basis of our past experiences. In other words, our ability to comprehend text is highly dependent upon our background knowledge (Richek, List & Lerner, 1989). When we read a text, our experiences, vocabulary, grammar and phonology permit interrelated impressions, or to use Shank's term (1975) "scripts", to surface to our minds. So in comprehension, we (1) process information, (2) match it against the prototypical script for events, and (3) assimilate or accommodate what is new in the text with what we already know. Each reading passage or sentence is considered to have certain implications that stretch beyond the surface representation. This is one of the reasons why Kenneth Goodman (1967) has called reading "a psycholinguistic guessing game". The bridges or links that the reader constructs originate mainly from what the reader deduces

from the evidence in the text and what the text says explicitly. The "bridge" metaphor, then, offers a rich store of implications for the teaching of reading.

Improving Reading Comprehension

In this paper, two ways of developing a meaning vocabulary which teachers can use to help their pupils improve comprehension will be discussed. These approaches are known as *semantic mapping* and *semantic feature analysis*.

Human memory contains an enormous variety of concepts that can be retrieved and used at will. People have concepts of many things and most of the time, their concepts have labels. In addition, large amounts of information associated with any given concept can be produced on demand. First, we must have a way to represent these concepts in a memory system such as that of Lindsay and Norman's (1972) or of Pearson and Johnson's (1978).

At this point I would like you to take part in a little experiment. Explain what the word "dog" means. What kinds of information do you produce when describing its meaning? A typical explanation goes something like this:

DOG: A dog is any of a large group of domesticated animal belonging to the same family as the fox, wolf, jackal. (*Webster's New World Dictionary*)

Similarly, what do the following words such as "car", "school", "rose"

mean?

CAR: A car is any vehicle on wheels such as an automobile.

SCHOOL: A school is a place or institution for teaching and learning such as a public school, a dancing school, college or university.

ROSE: A rose is any of a genus of shrubs with prickly stems and five-parted, usually fragrant flowers of red, pink, white, yellow.

These examples show us that the definition of a word consists of other words. Typically, a definition starts off by saying, "Concept A is really something else - concept B"; a car is a vehicle, a school is a place or institution and a rose is a shrub. Then, it goes on to specify the restrictions on the concept. Cars have wheels. A school is where teaching and learning takes place. The unique thing about a rose is that it has a prickly stem and fragrant flowers.

Another way of describing a concept is to give an example. If you were explaining what the word "car" means to someone who does not understand English, you will probably point out some examples, such as a Volvo.

An important part of the meaning or understanding of a concept must be embedded in its relationships to other concepts in the memory. On examining the way definitions of concepts are given, we find that only a small number of relationships predominate - the *class* to which concepts belong (a car is a vehicle), the *properties* which tend to make that concept unique or stand

out (has wheels), and *examples* of the concept (a Volvo). A standard definition can be summarized schematically thus:

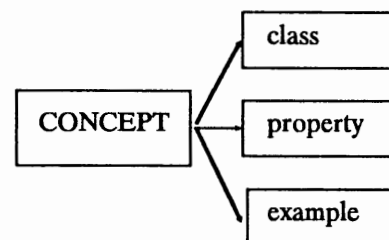


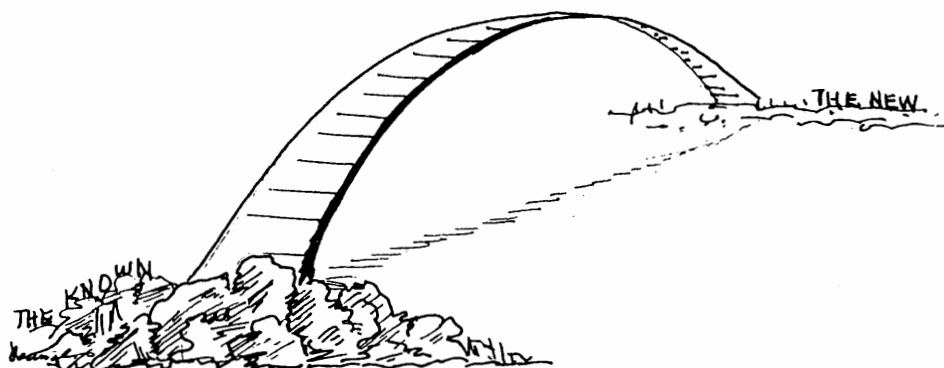
Fig 1. Definition of a Concept

Semantic Mapping

Collins and Quillan (1969), Lindsay and Norman (1972) and Pearson and Johnson (1978) portrayed this whole set of relationships graphically. The basic idea in Collins and Quillan's model is that words are organized in memory somewhat as in a thesaurus, with words of similar meaning located near one another with a hierarchical principle encompassing levels of abstractness or generality. Lindsay and Norman's model used definitions of concepts such as the examples that were mentioned earlier (car, school, rose) to map out the concepts and relations. I feel most comfortable with Pearson and Johnson's model and have used it extensively myself to extend and develop children's vocabulary. They called this semantic network a "semantic map", which consists of nodes and links between nodes (see Figure 2). Nodes represent concepts and links represent relations between concepts.

In the example of an incomplete semantic map of the concept "dog" as given by Pearson and Johnson (1978, pp. 27), the semantic map will resemble English more if a few of the labels are changed. For example, the *class* and *example* links (dotted and broken lines) can be replaced with a link commonly called "isa" (is, a). So, we can say "a dog isa pet", or "a dog isa animal". Also, we can replace the *property* link with "has" or "is" or "does". An example of each can be "a dog has fur", "a dog is loyal", "a dog does bark".

That is all very well at the word level, but, in most comprehension tasks, students have to deal with longer units of



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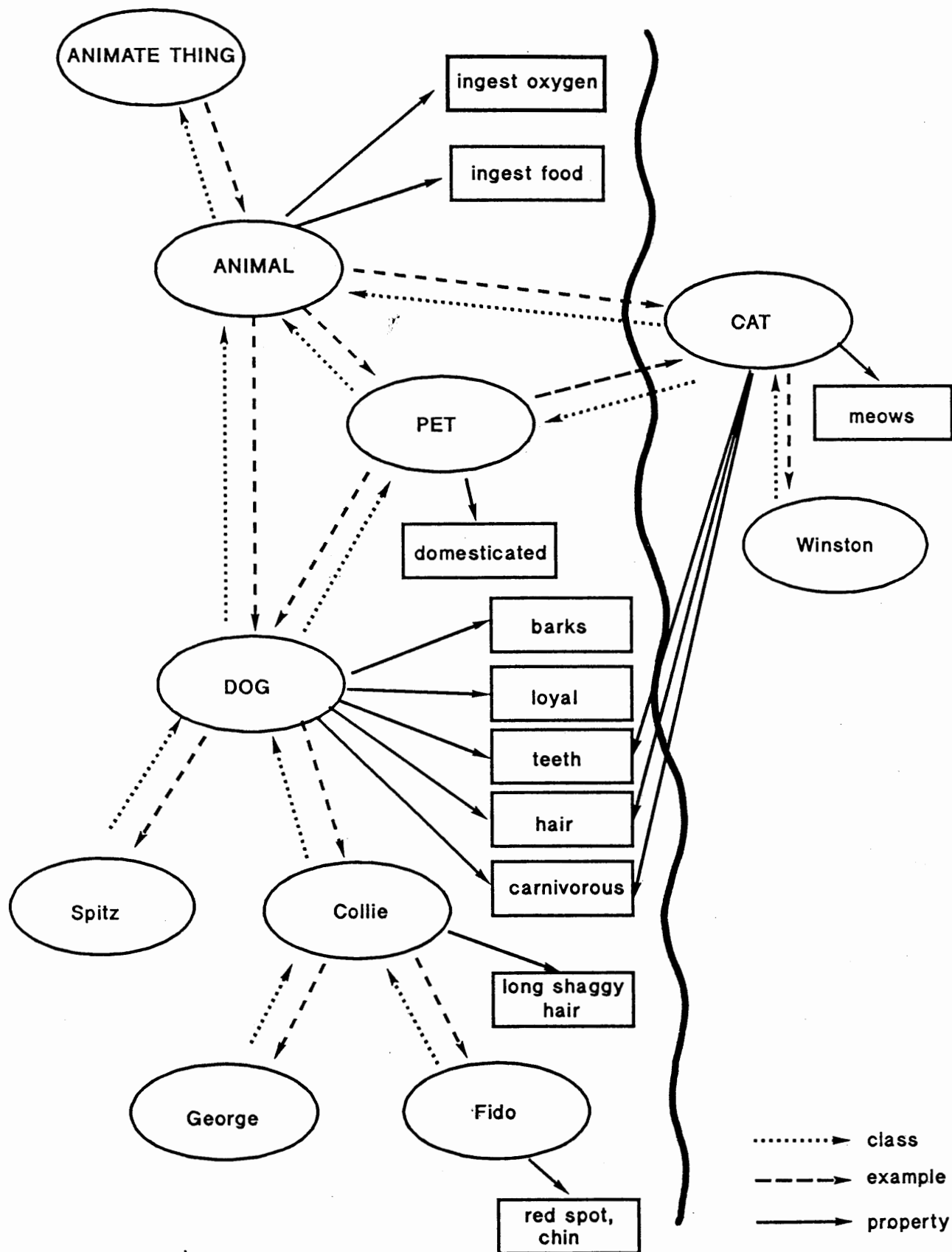


Fig 2. An Incomplete Semantic Network Representation of the Concept 'Dog' and Some of its Related Concepts

(Source: Pearson & Johnson, 1978)



Fig 3. Relations in a Semantic Network for a Simple Sentence

discourse such as, sentences and paragraphs. Lindsay and Norman (1972) have utilized Fillmore's (1968) case grammar to expand the number and kind of relations that can exist in a semantic network. The first thing to do here is to identify the basic *action*. Secondly, identify the *actors*, (1) what is the agent who caused the action to take place, (2) who or what is the object who directly affected or received the action. An example follows:

SENTENCE: Mary lost her doll.

Action: lost
Agent: Mary
Object: her doll

The action, then, becomes the focal point around which all other concepts in the event revolves. Schematically, the sentence can be represented as in

Fig. 3.

How are complex sentences expressed schematically? Fig 4 is an example used by Pearson and Johnson (1978) of a semantic map of the complex sentence (Fig. 4).

Because Samson was bewitched by Delilah, he cut his hair and lost his great strength.

Semantic maps like the one given in Figure 2 can be used with any word given in any language. Teachers can use this strategy in classroom instruction to make students aware of the vast store of knowledge they possess about most concepts. I have used semantic mapping extensively and effectively with children, especially those who come to school with limited vocabularies in English. Although they may be disadvantaged in terms of

their knowledge of English, many of these children are rich in experience and knowledge of their mother tongue. Ordinarily with these children, I would capitalize on what they already know and teach them to read through the Language Experience Approach (LEA). However, sometimes with certain children who need first of all to learn to express themselves in a language they will be reading in, I have found that the most effective way to accomplish this is to help them develop a richer vocabulary through semantic mapping. Using this method also provides me with insights into what students already know about a concept about to be taught, so that I can then plan to teach what the students do not already know and provide the "bridge" between what is new and what is known. Hence, semantic mapping is a valuable and informal diagnostic tool which teachers can use to advantage.

Semantic Feature Analysis

Another useful strategy to use to teach comprehension at the word level is known as semantic feature analysis. This involves identifying an overall category for a group of words, enumerating the related words, specifying features that these words share to show how they fit into the

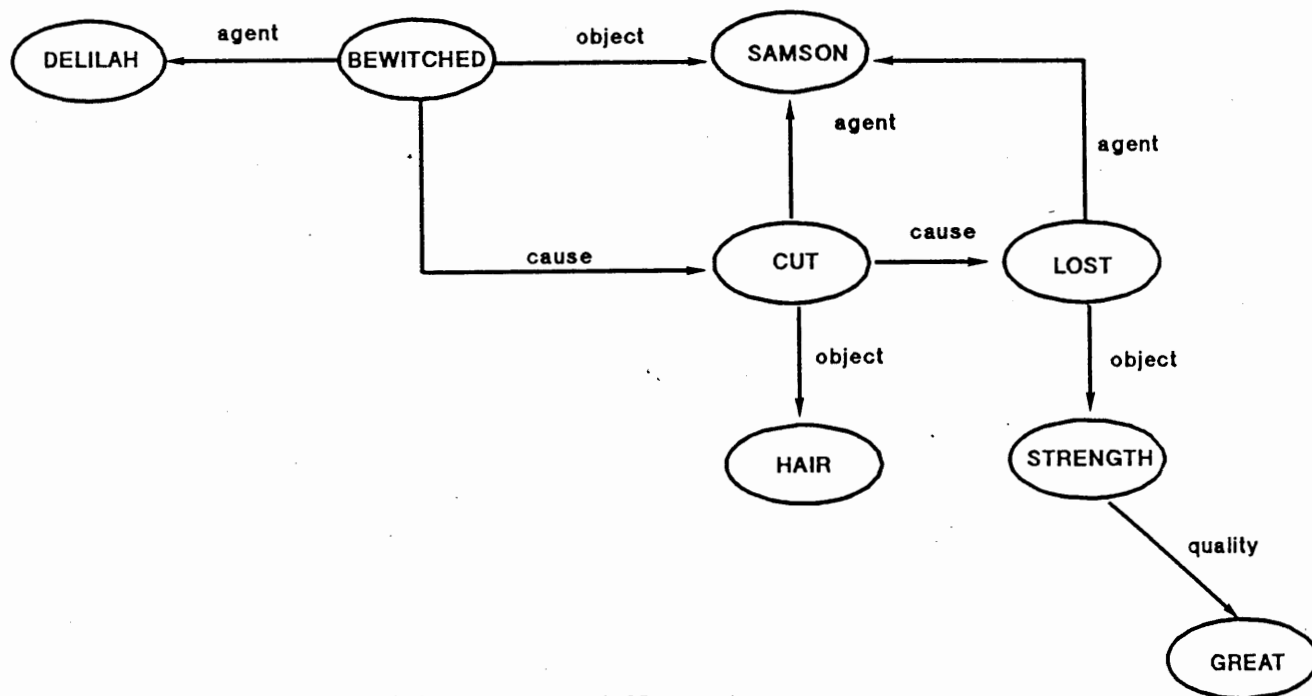


Fig 4. Relations in a Semantic Network for a Complex Sentence

Comprehension involves drawing inferences and interpreting statements according to our perception of what is said or written ...

overall class. The "bridge" metaphor and semantic feature analysis are also related in the sense that identification of word classes and their sub-elements can lead to the establishing of shades of meaning and boundaries of references.

Semantic feature analysis is one of the most useful classification activities a teacher can use for classroom instruction. To use semantic feature analysis, first start with some words that children know which share some common properties, for example, apple, orange, mango, durian, grape, rambutan, watermelon. List these fruit words on the chalkboard. Then, use pluses (+) and minuses (-) to indicate whether or not a word has a given feature. Have the children fill in the matrix, as shown in Figure 5.

After this, children may be asked to suggest more words that share some of these features (banana, papaya, strawberry) and then to suggest more features shared by some of these words (rough skin, smooth skin, local, im-

ported). Children will then complete the remainder of the matrix by adding pluses and minuses. Finally, have children go through all the words and their features so that they can discover for themselves that no two words have identical meanings as even the most synonymous pairs or clusters of words will have different patterns once enough semantic features are listed. Semantic feature analysis is thus a worthwhile exercise for teachers to use with children in order that they may learn that two words can only be "similar" and not "the same as". They will realize that the English language is a parsimonious language as no two words are exactly alike. This helps children develop precise thinking which in turn helps comprehension as children understand the exact meanings of words.

Semantic feature analysis can be constructed with any category of words. Teachers are advised to start off with concrete categories that are within the experience of pupils and later progress to more abstract ideas. As children improve in reading, teachers can substitute a scale of 0 to 10, similar to that in a Likert Scale instead of using pluses and minuses so that even greater precision is arrived at.

Summary and Conclusion

The two ways of developing vocabulary or comprehension described here - semantic mapping and semantic feature analysis - lead one to conclude that comprehension can be taught by using the "bridge" metaphor of linking what is new to what is already known to us. Much of

our knowledge of "words", together with their linkages or relations can be thought of as being stored in semantic maps which people carry around in their heads.

The majority of children enter school with rich listening and speaking vocabularies. These words they have represent the experiences they have encountered since birth which is different for each child. Hence, no two children can be expected to develop in the same way and possess the same kind of concepts to represent the world they have experienced. Most children are proficient language users by the time they reach school age. When they are allowed to bring all this experience to learning to read, gaining control over the process is relatively easy and quick for most (Phinney, 1988).

The implications of this for classroom instruction is that in order to introduce reading to a young child successfully, the teacher should match the language of the book to the child's language, thus enabling the possibility of the child's intelligent use of context. If reading materials are within the familiar sentence patterns to those he uses in speech and writing, he will be able to comprehend them much more readily. In order to ensure that this parallelism can be accomplished, reading teachers should utilize the child's stories and those of his peers as much as possible.

Another way of using words in context is to provide cloze procedure where the child is required to fill in a sensible word. A child's selections and his reasons for the selection should be discussed. In this way, the

	one seed	few seeds	many seeds	single	bunch	sweet	sour
apple		+		+		+	
orange		+		+		+	+
mango	+			+		+	
durian			+	+		+	
grape		+			+	+	+
rambutan	+				+	+	
watermelon			+	+		+	

Fig 5. Semantic Feature Analysis of Fruits

In order to introduce reading to a young child successfully, the teacher should match the language of the book to the child's language, thus enabling the possibility of the child's intelligent use of context

teacher can strengthen his abilities to use the semantic, syntactic and graphic clues to word recognition and meaning. Whenever possible, new words to be learned should be presented as concretely as possible--may be in pairs or clusters in which a relationship can be recognized. As the child's vocabulary develops, he should be given practice in arranging words in some sort of hierarchical order (for example, synonyms, opposites, actions, etc.). Classroom exercises may consist of practices in shifting from one category to another such as, recognizing that a father may also be a brother, son, cousin, uncle. This type of direct vocabulary teaching is strongly recommended to help a child develop word power.

To help students increase their background knowledge, there are several steps teachers can take. Teachers can help students build background before they read. The first part of the

reading lesson is the most crucial and often the most neglected. Teachers should ask students what they know about the subject of a text, teach important concepts (for example, through semantic mapping) that students are missing and relate subject to the material the students are reading. Teachers should also impart their own personal knowledge to students. A teacher's rich background knowledge is a repository of extensive cultural information, a valuable resource that should be shared with students.

In summary, let me reiterate a few points. Semantic mapping involves identifying words that represent concepts and those that show relations between concepts. Through semantic mapping, we use nodes to represent concepts and links to identify the relations between concepts. Semantic feature analysis involves identifying an overall category for a group of words, enumerating the related words, specifying the features that they share to show how they fit the overall class. In the hands of innovative teachers, both these strategies can prove to be powerful ways of developing vocabulary to aid in children's reading comprehension.

References

- Collins, A. M. & Quillan, M. R. (1969). Retrieval time from semantic memory. *Journal of Verbal Learning & Verbal Behavior*, 8, 240-247.
- Fillmore, C. J. (1968). The Case for Case. In E. Back & R.G. Harms (eds.) *Universals in Linguistic Theory*. N.Y: Holt, Rinehart & Winston.
- Goodman, K. S. (1967). Reading: A psycholinguistic guessing game. *Journal of the Reading Specialist*, 6, 126-135.
- Johnson, D. D. & Pearson, P. D. (1978). *Teaching Reading Vocabulary*.

N.Y: Holt, Rinehart & Winston.

Kintsch, Walter (1976). Memory for Prose. In Charles N. Cofer (ed.) *The Structure of Human Memory*. San Francisco: W. H. Freedman & Co.

Lindsay, P. H. & Norman, D. A. (1972). *Human Information Processing: An Introduction to Psychology*. N.Y. & London: Academic Press.

National Institute of Education (1976). *Request for Proposal a National Center for the Study of Reading*. Washington, D.C.: Dept of Health, Education & Welfare.

Oldson, D. R. (1977). From utterance to text: The bias of language in speech and writing. *Harvard Educational Review*, 47, 257-281.

Pearson, P. D. & Johnson, D. D. (1978). *Teaching Reading Comprehension*. N.Y: Holt, Rinehart & Winston.

Phinney, M. Y. (1988). *Reading with the Troubled Reader*. Ontario, Canada: Scholastic.

Richek, M. A., List, L. K. & Lerner, J. W. (1989). *Reading Problems: Assessment & Teaching Strategies*. 2nd Ed. Englewood Cliffs, N. J: Prentice Hall.

Wixon, K., Peters, C., Weber, E. & Roeber, E. (1987). New directions in statewide reading assessment. *The Reading Teacher*, 40, 749-755.

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