

NEW CONCEPT VOCABULARY: WHAT IS IT, AND WHAT  
DO I DO WITH IT WHEN I FIND IT?

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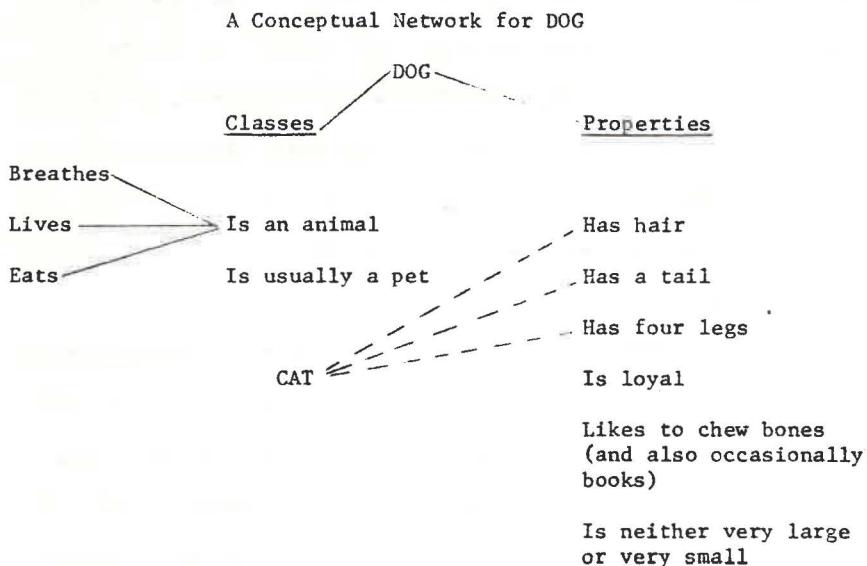
This paper on new concept vocabulary is the fourth and final paper in a series on the types of vocabulary to teach.<sup>1</sup> This final paper describes the Type Four words--words which are in neither the students' oral vocabulary nor in their reading vocabulary and for which they do not have an available concept. These words are the most difficult type of words to teach.

The first section of this paper discusses the difference between a word and a concept, and what it means to have and form a concept. The next section differentiates between new concept vocabulary (Type Four words) and vocabulary for which a concept is already available (Type Three words). The third section provides examples of new concept vocabulary, and the concluding section presents suggestions for teaching such words.

Words and Concepts

Basically, words are the means by which people communicate to each other. Words are used to give commands, share feelings, and explain ideas. How can words which are mere squiggles on a page or waves in the air be such effective tools of communication? The answer is that words are symbols for more extensive, more complex structures of knowledge than the words themselves. These structures of more extensive, complex knowledge are called concepts.

Concepts, thus, must be viewed not as single pieces of information, but as an outgrowth or generalization resulting from many related pieces of information. To understand the concept of a concept, let's look at one example of how separate pieces of knowledge can combine to form a concept. For example, the concept DOG is composed of what a dog looks like, what kinds of things a dog usually does, and the ways in which a dog is similar to and different from other animals. These related pieces of knowledge may possibly (no one knows, of course) be fitted together in our minds in a fashion similar to the following diagram. Such a compilation of diverse pieces of knowledge is called a conceptual network.



Note that this network includes the properties of DOG, such as "has a tail" and "is loyal," and the class memberships of "animals"

and "pets." Note also that an established conceptual network can never be totally independent of other networks as it invariably has links and relationships with other concepts, such as with the concept CAT.

Thus, if a student has the concept DOG, the student knows the properties and class memberships of DOG. These properties and class memberships are called the distinctive features of that concept. These distinctive features form the basis by which a person is able to distinguish a dog from a cow, a horse, or a cat.

Young children go through a period of not having a fully formed concept of a dog. They confuse a horse with a dog or a cat with a dog until they learn the distinctive features of a dog as a four-legged domesticated carnivorous animal that goes woof (or something similar). This example of gradual development demonstrates that concepts, and thus the words that represent them, are not necessarily either wholly formed or unformed. Rather, concepts can range from being "skeletal, containing only a small part of the information that will eventually become a part of it (a concept)" (Nelson, 1977, p. 229), to being a fully formed "generalization about related data" (Russell, 1956, p. 68). When fully conceived and formulated, a concept is organized information containing the distinctive features of a set of objects, classes, or ideas. One might even say that a concept is always in flux, capable of further development, and expansion. For example, a higher level

understanding of the relationship of dogs to cats, wolves, and foxes might expand the simpler, more common concepts of DOG and CAT.

The road to fully formed concepts is not clearly delineated. However, psychologists generally agree that a number of repeated exposures or experiences of a concept are necessary to enable a learner to extract the functional and relevant attributes (Carroll, 1964). This is not to say, however, that the beginning of a concept, a "skeletal concept," cannot be formulated on the basis of one event or exposure. A skeletal concept of MOON, for example, may be easily formed by one's seeing the full moon once. Also, skeletal formation of difficult and abstract concepts such as COURAGE can be based on a single story of courage and bravery. The time required for fully formed concepts, however, is clearly dependent on the complexity of the concept itself. Thus it will take longer for students to develop the concept COURAGE than the concept MOON.

One additional condition for teaching concepts that is important for teachers to remember is that concept development requires conscious verbal understanding rather than just visual impressions. This means that the students themselves need to draw conclusions as a result of their own thinking. The teacher can provide the opportunity, but without actual student involvement and thinking, a concept is not likely to emerge.

Three implications for teaching new concept vocabulary can be deduced from this discussion. First, concepts can range from being very concrete and perceivable such as the concepts DOG or MOON to being quite abstract without easily identifiable object referents such as the concepts JUSTICE, INFERENCE, or ADJECTIVE. So teachers need to be aware of the difficulty of a concept to be taught. Second, because the formation of concepts probably required repeated exposures and experiences over time, teachers need to structure learning experiences so that students have the opportunity for repeated and various exposures. Finally, the formation of concepts is cognitive work. To develop a concept the individual student must integrate and generalize on the basis of his knowledge and experience. Thus, learning must be structured to require the student to respond. Suggestions for specific teaching procedures are included in a later section of this paper.

#### Definition of New Concept Vocabulary

Before continuing, a working definition of new concept vocabulary is needed. This can most effectively be developed by contrasting new concept vocabulary with the Type Three vocabulary, words for which the student has an available concept. Of course, whether or not a student has a concept will vary from one age to another and from student to student. The words labeled in this discussion as Type Three or Type Four words would generally be such for the average junior high student. Some examples of Type

Three words are illuminate (light up), neophyte (beginner), and lackadaisical (unexcited). These are words which are understood easily by the presentation of a readily available, closely related synonym or phrase sharing many elements with an already known word. Thus, Type Three words can be easily placed into an existing conceptual network. Very simply, when students are presented with a synonym for an available concept word, they say, "Oh," and are able to continue on.

Type Four words, on the other hand, usually require the building of a new conceptual network, or a substantial revision or expansion of an existing network in order to relate that word to existing knowledge. When students are presented with a synonym for a new concept word, they are likely to say, "Huh?"

At this point it is necessary to recognize that the categories of Type Three and Type Four words will not always be mutually exclusive. As noted earlier, concepts are not either wholly formed or unformed, but exist on a continuum extending from a skeletal outline to a fully formed conceptual network. The definition for new concept vocabulary used here will be vocabulary for which students need help in extracting the distinctive features of a concept and relating those features to existing or new conceptual networks.

#### Examples of New Concept Vocabulary

Given the upper elementary and secondary English curriculum, what are some examples of new concept vocabulary that English

teachers might encounter? In Hemingway's novel The Old Man and the Sea, some of the new concept vocabulary that might need to be taught includes the technical vocabulary dealing with the specifics of Santiago's fishing equipment, such words as gaff and skiff. Other new concept vocabulary occurring in the novel are words used in describing fish, pectoral and carapaced, and vocabulary referring to life in the sea, plankton and man-of-war. Other words representing new concepts, such as cumulus, coagulated, and phosphorescence, are less specific to the novel, but still contribute to its meaning. Another often-taught English selection, Richard Wright's "The Kitten" contains new concept vocabulary, such as literal, retaliated, and injunction, that is much less context-specific.

#### Selecting New Concept Vocabulary

The obvious first step in dealing with new concept vocabulary is selection. Since teaching concepts takes multiple exposures, and therefore, time, it is wise to reduce the number of words to be taught. In addition, some Type One, Two and Three words may also need to be taught. As one step towards selection, teachers can classify new concept vocabulary according to various dimensions and criteria. Three dimensions that may be pertinent are utility, importance, and interest.

Deighton (1959) discusses the dimension of utility, suggesting that preference be given to those words which are most likely to contain parts useful in unlocking other words for the developing

reader (p. 35). He describes these words as "neutrons in the chain reaction of vocabulary development." Others call them master words, magnet words, or more commonly, root words. Returning to the new concept words from The Old Man and the Sea mentioned above, few of the technical vocabulary words referring to fishing, fish, or life in the sea would rate very high on this dimension. However, the word cumulus (related to cumulate, and cumulative) or phosphorescence (related to phosphorous, and other chemical terms) would rate somewhat higher. On the other hand, some of the words from "The Kitten" would rate high on this dimension. Injunction has the prefix in- and is related to junction, conjugate, adjunct, subjugate; retaliated uses the common prefix re-, and literal is related to literature, literate, and literacy.

The second dimension considered here, that of importance, refers to the importance of the words to the overall meaning and enjoyment of the selection. This dimension of importance recognizes that students cannot enjoy the novel The Old Man and the Sea without an understanding of the technical vocabulary describing the fishing equipment, such as gaff, and the relative size of the fish and Santiago's boat, a skiff. One junior high student I know commented that she couldn't understand why Santiago just didn't put the marlin in the boat. She was greatly enlightened when she discovered that Santiago's skiff was approximately 18 feet long, whereas the marlin was probably over 20 feet. In contrast, other

new concept words in The Old Man and the Sea, such as cumulus and phosphorescence would rate low on the scale of importance, as they are used to describe a setting and set a mood which is perceivable without these specific words. Another example of new concept vocabulary that would rate high in importance is the word literal from Richard Wright's "The Kitten." In this story the word literal is used to emphasize the basis on which the young boy dares to challenge his father's authority.

The third dimension, that of interest, is a loophole category, allowing room for either the teacher's or students' favorite words. This interest category is certainly as important as the other dimensions of utility and importance because of the role interest plays in learning. Students will become more involved in learning new vocabulary if they already have had some interest or curiosity about a word. Lurk and alien would be my choices from "The Kitten" for this category. The word lurk is fun because of its onomatopoeic quality its very sound gives a clue to its meaning. The word alien reflects my science fiction interest. It may also be justifiable in its relation to words such as alienate, alienation, and inalienable.

A final consideration in the process of selecting words which represent new concepts for students is, of course, the students themselves. As mentioned previously, what are or are not new concepts will differ from one student to another. At the same time,

many of these Type Four words are generally difficult, and in many cases they will need to be taught to nearly all the students in a class, even at the senior high level. Even those students for whom these words do not represent new concepts may have only skeletal, or semi-formed concepts. For these students, teaching these words can help to develop and expand these concepts.

#### Teaching Procedures

Once the vocabulary representing new concepts has been chosen, what are some of the teaching procedures for these words? One of the most basic requirements for concept development is a series of experiences that are more or less similar. It is from the multiple presentation of both positive and negative instances that a concept is formed (Carroll, 1964). This basic approach for concept formation has been formalized by Frayer (1969) and tested by Peters (1975, 1977). The approach provides those multiple exposures and experiences with a word that result in the acquisition of the distinctive features of the word's meaning, and the incorporation of the word into a conceptual network. By systematically presenting the attributes and features of a concept, the time new concepts spend in our cognitive attic can be reduced.

The Frayer model of concept formation has five parts. It requires the listing of relevant attributes, irrelevant attributes, a definition, non-examples, and relationships with similar concepts. The example used by Peters (1975) to illustrate this model is the

word globe. As the first step in the process Peters lists the relevant attributes of a globe. The relevant attributes of a globe are that it is a spherical representation of a planet. Note that the relevant attributes are those qualities which are common to all examples of the concept. The second step lists the irrelevant attributes. Some of the irrelevant attributes of a globe are its size, its color, and which planet it represents. Irrelevant attributes are those qualities which are not essential to the concept. Thus, it is possible to have a moon globe or an earth globe, a small globe or a large globe. A formal definition of the concept including the relevant attributes is the next step. This step develops a usable definition. The fourth step provides a non-example of the concept, preferably one that might be confused with the concept. This non-example serves to limit the concept so it is most effective if the non-example shares some of the attributes of the concept. In this case a wall map shares the attribute of being a representation of a planet, but of course does not share the spherical attribute.

The final step is that of determining the relationship of the concept with other concepts. Here the approach is to think of closely related words and concepts and differentiate among them by various means. One method is to compare and contrast the concept being taught with others. A globe is like a ball because it is \_\_\_\_\_. A globe is different than a ball because it is \_\_\_\_\_.

Or a globe is like a wall map because it is the representation of a \_\_\_\_\_, but the wall map is different from a globe because it is \_\_\_\_\_, not round.

This Frayer model could also be used in teaching the word skiff from Hemingway's novel. Although the basic meaning of the word skiff may be easily communicated by noting its relationship to boat, knowing the distinctive features of a skiff, as a small sailboat light enough to be rowed by one person, is important to an understanding of the courageous struggle between Santiago, the sea, and the fish. For purposes of teaching this novel, then, the word skiff was classified as a new concept vocabulary word. In other novels and contexts, the synonym boat would probably be sufficient. The following chart develops the concept of skiff according to the Frayer model.

## Model to Develop the New Concept Word, SKIFF<sup>2</sup>

1. Provide relevant attributes. 2. Provide irrelevant attributes.

skiff a small sailboat  
able to be rowed  
by one person

skiff color  
material

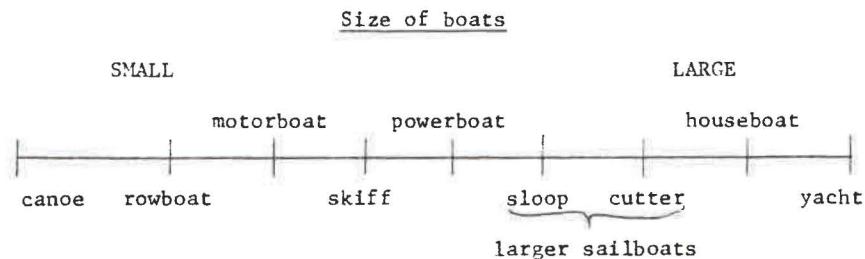
3. Definition--a small sailboat light enough to be rowed by one person.

#### 4. A non-example.

skiff  $\neq$  canoe  
motorboat  
dory

5. Determine the relation of a concept with other concepts.

(A chart may be effective with many new concepts.)



At the same time that the size of a skiff is being considered for The Old Man and the Sea, the size of the various fish in the novel might also be discussed. Perhaps prior to introducing the novel, a few students could make a chart showing the marlin and the sharks, their relative size and weights, as compared to Hemingways' skiff. Another chart of a skiff with its various sections labeled, as bow, stern, tiller, rudder, and drawings of a gaff and a harpoon would also serve to illustrate recurring technical vocabulary.

A variation of this approach for teaching new concept vocabulary gives particular emphasis to establishing relationships between the new concept and existing conceptual networks. In this method information is elicited from the students as to their previous knowledge of a particular category or topic. The teacher then incorporates those responses into a diagram that illustrates the relevant attributes of a particular concept. For example, in teaching the word tundra, the teacher would first provide a sentence or paragraph

illustrating the meaning of tundra as a flat, treeless, cold land. The teacher then would ask students to name other types of land they are familiar with. Likely responses would include desert, plain, forest, jungle and mountains. Comparisons and contrasts on the basis of vegetation, temperature, and precipitation could be drawn. A teacher or student might comment on the similarity of a tundra to Minnesota in the winter, or the similarity of a desert and a tundra in its lack of trees. Various diagrams similar to the one's shown below could be constructed on the basis of student responses.

Diagrams Showing Similarities  
and Differences Between TUNDRA  
and Other Words

<u>Similarities</u>	<u>Lands</u>	<u>Differences</u>
flat	tundra	cold
little vegetation	desert	hot
few large animals	plain	moderate
little rain		

(Differences)

<u>Tundra</u>	<u>Jungle</u>
cold	hot
flat	hilly
little vegetation	abundant vegetation
few animals	many animals

A number of variations utilizing these approaches for teaching

concepts can be used as whole class activities or smaller group activities. In either case, there is room for learning for all students. Considering the above examples, it may be that lower ability students will understand the basic similarity between skiffs and rowboats. On the other hand, average and above average students may be able to build clear distinctions and relationships among many types of boats, fish or lands. In addition, students of all abilities might enjoy attempts at researching and building diagrams and charts themselves. These diagrams could then be used as study guides or bulletin board materials.

One thought that may occur to those of you reading this is that the teaching approaches suggested here are extremely time consuming. This is certainly true. But learning new concepts is time-consuming. Some teachers may wonder if it is necessary or advisable to attempt to teach vocabulary concurrently with literature. One reply to this is that words are the very building blocks, the very medium, the very essence of literature. Inadequate knowledge of words, leads to clouded and imprecise understanding. Students cannot understand stories focusing on robots, tundras, or skiffs without some understanding of the attributes of these words.

FOOTNOTE

1 A paper by M. F. Graves, MEJ Spring 1978, discusses words which are in students' oral vocabulary, but which they cannot read; a paper by R. J. Ryder, MEJ Fall 1978, discusses new meanings for words which are already in the students' reading vocabulary, but have more than one meaning; a paper by R. J. Palmer, MEJ Spring 1979, discusses words which are in neither students' oral or reading vocabulary, but for which they have an available concept.

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