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Vocabulary instruction in a balanced reading program

Although somewhat overlooked in recent years, vocabulary (word meaning) development is a critical aspect of successful reading. This article explores the role of vocabulary in reading development and suggests some classroom-tested approaches for nurturing vocabulary development and interest in students.

Children's word recognition capability, vocabulary growth, and comprehension development are essential components of a balanced reading program. Reading instruction that focuses on the growth of children's vocabulary results in enhancing their abilities to infer meanings and to better comprehend what they read. As noted by Daneman (1991), vocabulary is partially an outcome of comprehension skills, and reading comprehension is partially an outcome of vocabulary. Thus, they provide a mutual benefit in promoting reading development. As children's vocabulary grows their ability to comprehend what they read grows as well; furthermore, as their comprehension skills grow so do their abilities to learn new words from context.

Children with broad vocabulary knowledge are better able to infer the meanings of unfamiliar words in the texts that they read. Vocabulary knowledge supports the reader's text processing and interaction with the author, which in turn promote the formation and validation of concepts and learning. The author's and the reader's vocabulary and experiences are woven together to form the fabric of learning, confirming, reasoning, experiencing, enjoying, and imagining.

However, vocabulary instruction has not been a focus of recent professional writing and discussion. Although *The Reading Teacher* has published articles during the past year on word recognition and comprehension instruction, there have been no articles devoted to vocabulary instruction. Indeed, only 2% of all submissions for *The Reading Teacher* in 1997 dealt with instruction in vocabulary (Padak & Rasinski, 1998). Moreover, Cassidy and Wenrich (1998/1999) report that the consensus of literacy leaders is that vocabulary is currently *not* a hot topic.

Vocabulary instruction is an integral component of teaching children how to read both narrative and informational text. We advocate a balanced approach to teaching vocabulary—at one end of the continuum is writing word definitions and at the other end is learning vocabulary solely through contextual reading and experience. We recommend an eclectic approach in which both direct instruction and wide reading are means for fostering vocabulary development.

Children who are capable decoders often experience difficulty in reading when they encounter too many words for which they have no meaning. As students are expected to use reading to acquire new information, the role of

vocabulary knowledge takes on greater importance. Not having access to the meaning of words representative of the concepts and content of what they read causes difficulty in children's comprehension of texts, limits their ability to make a connection with their existing background knowledge, and inhibits their capacity to make coherent inferences (Heilman, Blair, & Rupley, 1998). Because it further nurtures children's comprehension development, vocabulary knowledge is a critical part of a balanced reading instruction program.

Vocabulary growth

Continuous cultivation of students' language ability is the foundation for vocabulary growth. Readers and writers share meanings through their direct experiences with people, places, objects, and events and through their vicarious experiences, including interactive technology, videotapes, pictures, movies, reading, and writing. Children's vocabulary knowledge closely reflects their breadth of real-life and vicarious experiences. Without some knowledge of the concepts that written words represent, students cannot comprehend well. Vocabulary is a shared component of writing and reading—it helps the author and the reader to interact and the reader to comprehend through the shared word meanings.

Students' knowledge of words can range from simple to complex. Word knowledge can be viewed as a "continuum from no knowledge; to a general sense, such as knowing that mendacious has a negative connotation; to narrow, context-bound knowledge; to having knowledge but not being able to access it quickly; to rich decontextualized knowledge of a word meaning" (Beck & McKeown, 1991, p. 792). One form of simple level word knowledge is definitional. Definitional knowledge is word knowledge based upon a definition that may come from a dictionary, thesaurus, glossary, word bank, or other individuals. Often, however, definitions do not help a reader understand or infer the contribution of an unknown word's meanings to the text. To comprehend, a reader needs some idea of not only a word's meanings, but also the ways in which the meaning contributes to the cohesiveness of the ideas or information.

Another simple level of word knowledge is contextual. Contextual knowledge is word

meaning derived from context, which can include a sentence, a passage, a discussion, or a picture (Watts, 1995). However, contextual clues have limitations in enabling children to derive the meaning of words. Use of context to derive the contribution of word meanings to the comprehension of text requires knowledge

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Children's vocabulary knowledge closely reflects their breadth of real-life and vicarious experiences.

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of the content and how the meanings of words combine to facilitate communication of the content through author and reader interaction. Often extracted text (sentence or short paragraphs) has inadequate context for enabling children to use their prior knowledge to know or to infer the meaning of a word. Consider the following:

Randy became very nervous as the doctor's assistant approached him with the sphygmomanometer.

The sentence context helps to some degree to understand the general setting of the event (perhaps a doctor's office), that Randy is experiencing fear or excitement, and that the sphygmomanometer is a thing. However, none of this context is helpful in inferring the meaning of the word until we read further.

She asked him to roll up his sleeve so that she could take his blood pressure. Wrapping the wide band tightly around his upper arm, she commented, "This new sphygmomanometer is so much more accurate in taking a patient's blood pressure than the old one we used to have."

Able readers integrate information as they read to construct meaning. If context is not enough to derive meaning from an unknown word, skilled readers use their language knowledge to help them infer meaning. They perform these operations so rapidly and automatically that they are not aware of them.

Vocabulary and concept development

Readers' experiential and conceptual backgrounds are extremely important in vocabulary

development. Background experiences are what readers use to develop, expand, and refine concepts that words represent. Tennyson and Cocchiarella (1986) note that there are two phases in the learning of concepts. The first phase is an understanding of the function of concepts in relation to their attributes (which they refer to as prototypes) and then making connections of new concepts with existing concepts. The second phase is using procedural knowledge, which is "the classification skills of generalizing to and discriminating between newly encountered instances of associated concepts" (p. 44). In phase 1, individuals may undergeneralize and overgeneralize due to their limited experiences with concept. This is often evident in young children when, for example, they call all large animals in a pasture "cows" and all liquids for drinking "milk" or "juice." In phase 2, children can distinguish between cows and horses and various liquids for drinking. Vocabulary expands when children have numerous opportunities to encounter new words and examples that are representative of these words in rich contextual settings. Individuals do not use restricted definitions of words as they read, but construct word meaning in terms of context for the concepts that represent their background knowledge.

Active processing of vocabulary

By building connections between "old" vocabulary words and new words found in their reading, students begin to understand relationships among words they encounter. When instruction is based on building connections, students are not just asked to supply words that fit the example, but rather to describe how words fit in the stories and informational text that they read. As we visit and participate in elementary classrooms we see many children such as Matthew, who just finished reading the first chapter of *The Dinosaur Who Lived in My Backyard* (Davis & Hennessy, 1990) and used "enormous" to describe the size of the dinosaur. His teacher smiled and commented on his vocabulary, "Can you think of some other words that you might expect to find in the book?"

Matt smiled and said, "Yep, gigantic, huge, and colossal. Kinda like King Kong."

Such discussions and activities that relate and support the integration of new words and the concepts they represent to the children's past experiences help to expand their vocabularies in a meaningful manner.

Knowing a word in the fullest sense goes beyond simply being able to define it or get some gist of it from the context. Active processing that associates experiences and concepts with words contributes significantly to vocabulary growth, enhanced comprehension, and continuous learning. Vocabulary instruction that encourages children to discuss, elaborate, and demonstrate meanings of new words, and provides varied opportunities for them to use new words outside of their classroom has been shown to be effective (Beck, Perfetti, & McKeown, 1982). Such vocabulary instruction is based on and encourages active processing of word meaning.

Active process vocabulary instruction

Teaching vocabulary in a balanced reading program should be grounded in teacher-directed instruction, varied opportunities for students to practice and apply their word knowledge, and exposure to wide reading and writing activities in both narrative and informational texts. Students ought to be engaged in learning new words and expanding their understanding of words through instruction that is based on active processing. That is, students are not just memorizing definitions but are entering information and integrating word meanings with their existing knowledge to build conceptual representations of vocabulary in multiple contextual situations. The following instructional guidelines (Blachowicz & Fisher, 1996; Blachowicz & Lee, 1991) reflect the inclusion of these active processing components.

1. Select words for vocabulary instruction that come from texts that students will read in the classroom. This helps make the meanings of words relevant to the context in which they appear and helps to build connections between existing knowledge and new knowledge. Students encounter the new words in a confirmatory manner rather than as an unknown word.

2. Base instruction on language activities as a primary means of word learning. The focus of the activities should be on engaging the students in generating the learning of new words to enhance remembering and deep processing of the words. Students should be provided multiple op-

portunities to use new words in their speaking, listening, reading, and writing activities.

3. Build a conceptual base for learning new words. Use analogies, language features, and other relationships to known words to activate students' background knowledge of concepts related to new words.

4. Provide a variety of instructional strategies to store word knowledge (mental pictures, visual aids, kinesthetic associations, smells, tastes, etc.).

Instructional activities that allow for a visual display of words and promote students' comparing and contrasting of new words to known words can be a beneficial means for increasing their vocabulary knowledge. Semantic mapping, semantic feature analysis, word mapping, and webbing are effective instructional strategies that incorporate many of the guidelines for active processing of vocabulary. These instructional activities enable students to expand their vocabularies, understand relationships between existing and new information, and learn. Visual displays of words can be used to preteach essential concepts and information in texts before students read. The teaching and reviewing of key concept words prior to reading help students activate their background knowledge, relate this knowledge to new concepts, and understand how new words and concepts are related.

Applications and examples of active process vocabulary instruction

It is important that vocabulary instructional practices immerse students in language-rich activities that teach words in meaningful reading experiences. Vocabulary emphases include teacher-directed instruction and appropriate practice in specific skills along with broad reading and writing opportunities. Vocabulary instruction is often criticized when it is taught in isolation of text and becomes a dictionary activity in which students copy definitions of words and then write sentences using these words. Instruction such as this, which avoids active student engagement in vocabulary and concept development, does not connect to students' previous knowledge. A richer vocabulary experience would be to have students first write sentences using the vocabulary words, then use the dictionary to confirm if the sentence context used an acceptable meaning of

Figure 1
Concept wheel

Migrate
whales
birds
fly south
butterflies
farmers
travel
winter
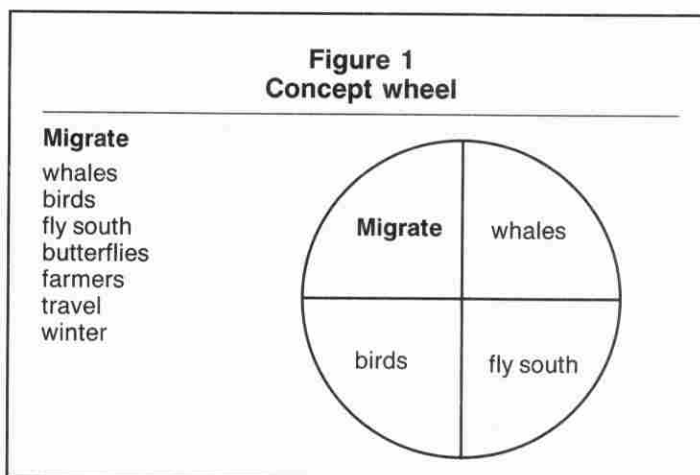
the word. Vocabulary instruction, whether it is focused on narrative or informational text, is most effective when it relates new words or derivations of words to existing vocabulary and background knowledge.

The following classroom vignettes are illustrative of how a teacher, Ms. Marie Thomas, uses exemplary vocabulary strategies in her classroom. Ms. Thomas is an amalgamation of the countless teachers with whom we have worked. She embodies characteristics of many of the teachers we have visited, worked with, and observed over numerous years—teachers who recognize that vocabulary is the glue that holds stories, ideas, and content together and that it facilitates making comprehension accessible for children. Ms. Thomas is representative of teachers who shared with us how their learning about effective vocabulary instruction in reading, science, math, writing, and social studies gave them newfound enthusiasm for teaching. She represents the teacher in one of our staff development projects who said, "I have grown not only in my teaching but in my learning, also. I learned how to actively use vocabulary instruction in my teaching of science."

Concept wheel/circle

One instructional technique that builds on students' background knowledge, encourages brainstorming and discussion, and at the same time visually displays the connection between previous conceptual knowledge and the new word being encountered is the concept wheel/circle (see Figure 1).

Ms. Thomas teaches science to a fifth-grade class of approximately 20 students. She begins her lesson one morning incorporating the concept wheel or concept circle into her current science lesson. She explains to her class, "Today, we're going to be studying several terms that relate to our subject about animals and their environment." The first word she suggests is *migrate*.

Vocabulary instruction that encourages children to discuss, elaborate, and demonstrate meanings of new words and that provides varied opportunities to use new words outside of their classroom has been shown to be effective.

She begins by asking her class, "Okay class, what are some words that come to mind when you think of migrate?"

Suzy raises her hand and calls out, "Whales! Whales in the ocean, not at Sea World!"

Ms. Thomas responds, "That's good, Suzy! Why did you think of whales?"

Suzy answers, "This weekend my mom and I watched a show on TV that said something about whales swimming from one part of the ocean to the other looking for food and stuff. My mom told me that whales that live in places like Sea World can't do that because they live in a big tank."

Ms. Thomas calls on Todd: "I think of butterflies and birds because they fly."

Greg raises his hand and responds, "Yeah, but birds don't just fly. I think they fly south or somewhere warmer."

Ms. Thomas asks the students to suggest where the birds might fly, and Amy states, "I know. Birds fly to Florida in the winter because it never snows and they can stay warm."

Ms. Thomas acknowledges that everyone has responded well and prompts the students to continue suggesting a few more words.

Scott raises his hand, and when he is called on responds, "I think that migrate means to travel or move to another city or something."

When asked to explain, Scott continues, "Well, people and birds or whatever travel to places when they want to be warmer like Greg said."

"That's very good, Scott. Does anyone else have any suggestions?"

"I think migrate has something to do with winter, but I'm not sure," offers Erin.

Alicia calls out, "I think of farmers when I think of migrate because they've got animals like sheep and cows that move around from pasture to pasture."

Ms. Thomas asks the students to end the suggestions and proceeds to generate a list of words that fit appropriately with migrate. She includes all of the suggested words, and they are written on the chalkboard. Upon the completion of the list she directs the students to turn to page 342 in their science textbook, find the word *migrate*, and listen as she reads the glossary definition of the word. The students compare their generated list of words to the definition.

Ms. Thomas then tells the class, "I'd like everyone to look over these words on the board very carefully. Now based upon the definition located in the glossary, you need to decide on at least three words from this list that will help you remember the word migrate. I want you to write your selected words in your wheel and turn in your assignment at 10:30."

Suzy chooses her words and writes down *whales*, *birds*, and *fly south* in her concept wheel.

Another way to use the concept wheel is to allow students to place the correct vocabulary word with the corresponding concept wheel. Then the students identify the concept that is being completed by providing a name for the wheel. This approach has several alternative modifications to fit the various needs of teacher/student instruction.

Semantic word map

Semantic word maps allow students to conceptually explore their knowledge of a new word by mapping it with other words or phrases, which categorically share meaning with the new word. Words that function as labels for and as a means of integration of concepts do not often clearly demonstrate the meaning behind the concept when viewed alone. Word maps allow students to learn the connection among several words in order to provide a clearer definition of the concept represented.

The concept becomes clearer when words are grouped together by similar criteria such as ideas, events, characteristics, examples, and so forth. Word maps work best when the teacher allows students time to brainstorm, generate a list, and participate in whole-class or small-group discussion. Once the list is generated the teacher can allow small groups to work together to create a semantic word map. It is important to remember to allow time for the groups to share their ideas on how they constructed their semantic map. Processes used by students often provide teachers with a richer, deeper understanding into students' base of understanding than will the final product.

Ms. Thomas decides to use a semantic word map while teaching her lessons on different forms of energy. She begins her class by asking, "Does everyone remember last Friday when I explained that we would be spending this week exploring different types of energy? Well, we are going to start today's lesson with solar energy as the first type of energy. I'd like everyone to brainstorm as many words as they can regarding solar energy."

For the next half hour, students give suggestions similar to Ermine's, "My dad told me that solar energy comes from the sun and is a form of power."

Ms. Thomas says, "You're right, Ermine. The sun is how the energy becomes available, and the power it gives off is an effect of solar energy."

More students respond with words related to their ideas of solar energy while Ms. Thomas affirms their examples by listing their words on the board. Once the class as a whole suggested all the words they could think of, Ms. Thomas says, "Next, I'd like you to organize the list of words that have been suggested and place the appropriate words under the categories that we discussed, such as effects, cost, education, and feasibility. You will work in small groups to complete this activity. In your groups, I want you to decide which words belong under the appropriate categories. Be sure to discuss why you placed the terms under the selected categories. I'll give you about 10 minutes to complete your word map."

Using this process the students begin to determine which words are appropriate and which words should be excluded. As each group discusses the construction of their word maps, Ms.

Thomas walks around the room observing each group's progress and assisting when needed.

At the end of the 10 minutes Ms. Thomas interjects, "Okay, everyone! I saw some good work going on within your groups. I'd like to spend the rest of the period allowing each group to come up to the front of the class and present your semantic word maps."

Hector, Alicia, Donald, and Rose Marie volunteer to be first and proceed to explain their word map and how they decided to choose each word for the appropriate category. The word map in Figure 2 is an example of their work.

Webbing

A method that graphically illustrates how to associate words meaningfully and allows students to make connections between what they know about words and how words are related is semantic webbing. It allows students to see the relationship between words and concepts that they have previously experienced or read. In order to ensure that students grasp the features and purposes of webbing, the teacher can use a web with an empty center. Students can begin to understand the relationship of words in the web by choosing and considering words that might complete the center word.

Following the lesson on solar energy, Ms. Thomas introduces the next energy lesson, on electricity. "We're going to do some more brainstorming. Someone give me a word that comes to mind when you think of electricity," she asks.

As Jerome raises his hand he suggests, "I think of lightning when I think of electricity."

Ms. Thomas responds as she writes the suggestion on the board, "Good, Jerome. Can someone think of a word related to lightning or electricity?"

Tom calls out, "Yeah! Wasn't it Benjamin Franklin who flew his kite and discovered electricity?"

As the lesson progresses, one student suggests Thomas Edison while another person suggests light bulbs because Thomas Edison invented the light bulb. Along with the comments, Ms. Thomas writes the words on the board and links them together appropriately. After one student mentions Christmas lights, Rose Marie asks, "Wouldn't Santa go with Christmas lights?"

Ms. Thomas writes down her suggestion and redirects the students' comments back to elec-

Figure 2
Semantic word map

Availability
- Sun — Endless supply
- Materials — Requires manufacturing — Sand is a non-renewable resource

Effects
- Long-term — Increasing need of power — Population increase
- Environmental — Mining sand could have a negative effect on environment — Technological advances

SOLAR ENERGY

Cost
- Equipment — Governmental budget
- Education — Cut utility cost 85%

More money needs to be spent on solar energy materials and research ($608 billion spent on nuclear vs. $79 billion for solar)

Feasibility
- Commitment — Need increasing global commitment
- Implementation — Easy to do because technology in place and solar power in use

Education
- Needs — Global awareness
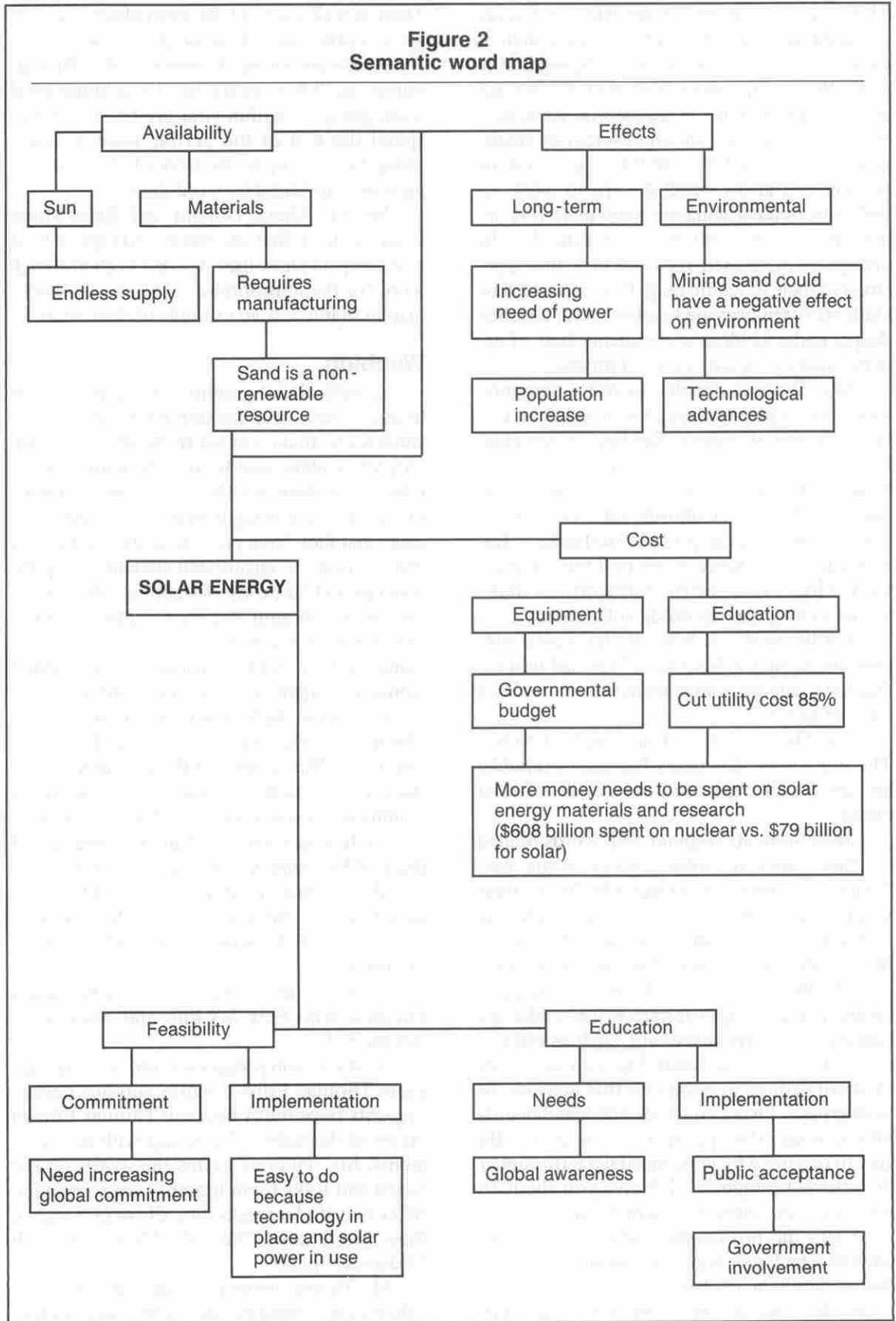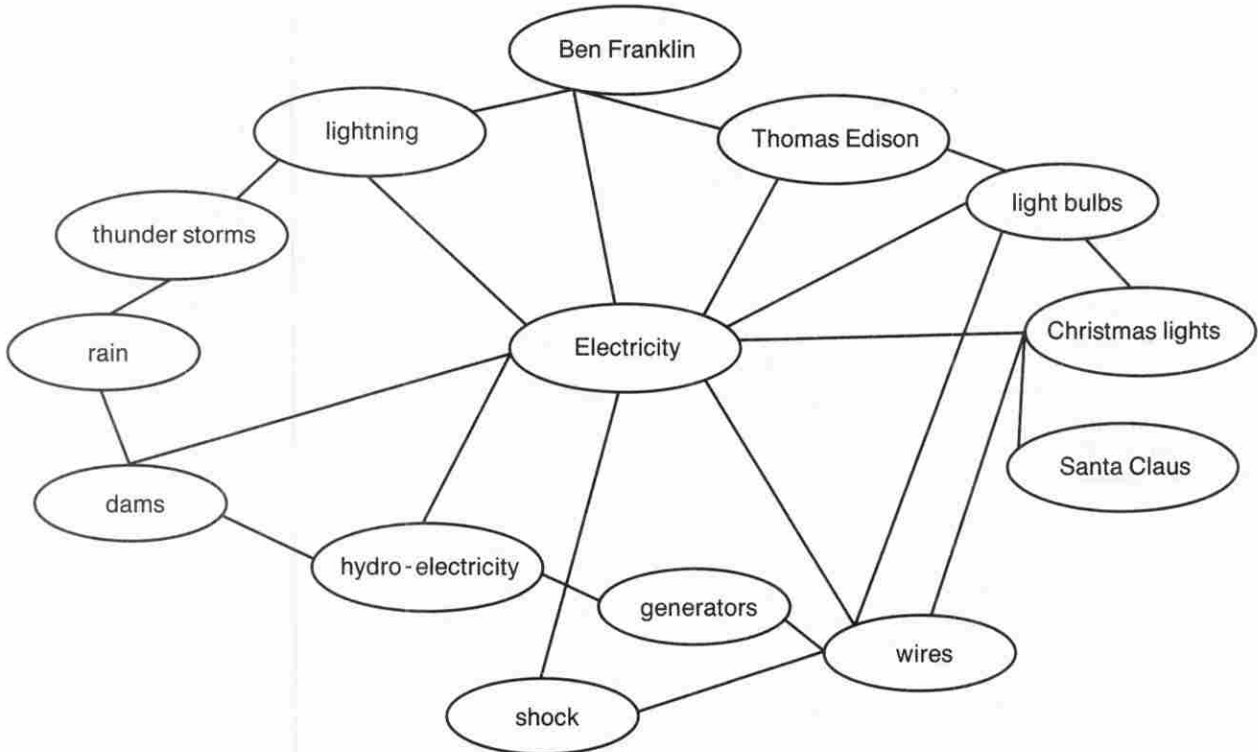- Implementation — Public acceptance — Government involvement

Figure 3
Semantic web

tricity-related words so that the focus remains on the key concept. The result of the class discussion can be seen in the example in Figure 3.

Concept of definition

A variation of concept mapping and webbing is a procedure that Schwartz and Raphael (1985) refer to as concept of definition, which provides a framework for organizing information in order to define new vocabulary words. Concept of definition instruction enables students to clarify the meaning of unknown terms by using a hierarchical structure to conceptualize the definition of the new term. Concept of definition makes use of categories (What is it?), properties (What is it like?), illustrations (What are some examples?), and comparisons (How are examples same or different?) in order to provide students with a clear understanding of the new term. After mapping the word, students should supply an oral or written definition for

the given concept, and the teacher should provide assistance to help students realize that the amount of properties and illustrations may vary depending on the complexity of the new term.

Application of concept of definitions was evident in Ms. Thomas's class in a lesson on animals and their environment. "Let's spend some time today discussing a type of animal and related ideas. The first animal type is fish. I'd like everyone to pay attention to the following ideas: categories (What is it?), properties (What is it like?), illustrations (What are some examples?), and comparisons (How are examples same and/or different?). With each idea, brainstorm together to come up with words that you believe belong under each category."

Amy raises her hand and mentions, "I think that fish are scaly."

Ms. Thomas responds, "That's true, Amy. What do you think *scaly* means?"

"Being scaly is when you have rough skin or flakes on your body like a fish."

Figure 4
Concept of definition
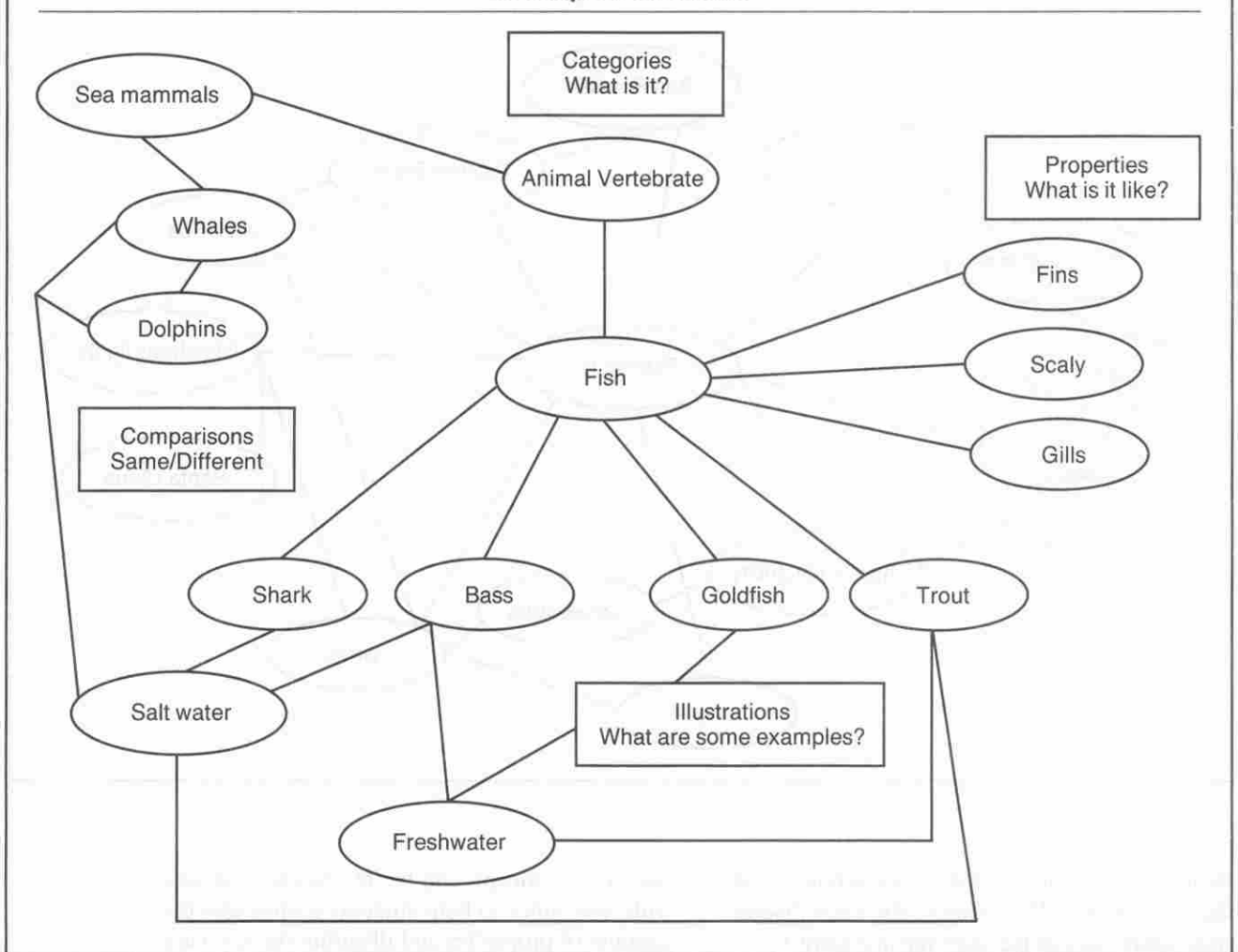
Ms. Thomas writes *scaly* on the chalkboard and asks Amy for the category of the word. Amy says, "I guess it would fall under properties because it describes what the fish is like."

As each student provides different words, Ms. Thomas asks for a definition and where the word should be placed. After the completion of the organizer Ms. Thomas asks the students to write a description of fish similar to ones located in their science text. The students then compare their written descriptions with the text. Ms. Thomas' class created the concept of definition in Figure 4.

Semantic feature analysis

Semantic feature analysis can also help students understand relationships among words

and relate their background knowledge to new words. This approach is beneficial to students when words are closely related by class or common features. In order for students to analyze common vocabulary the teacher lists several familiar words that are related, such as types of fish, on a chart. Next, the teacher guides the students to discuss features or characteristics associated with the words listed. As students suggest features, these are written across the top of the chart (e.g., location, size, behavior), creating a matrix that the students can complete in terms of presence (+) or absence (–). As the students broaden and define their concepts, the teacher adds words and features to the list and analyzes them. Semantic feature analysis is a strategy that can be used

for both narrative and informational texts. The arrays can be developed and expanded as students' background knowledge grows. During a subsequent lesson, Ms. Thomas brings exciting news to class, "I have thought of a good way to conclude our unit on fish. How does an aquarium set up in our classroom sound?"

The students are unanimously excited. Alicia offers an idea. "Ms. Thomas, my dad has an aquarium in his restaurant and it has goldfish in it. Could we have goldfish in ours too? They're really colorful."

Billy raises his hand and asks, "What about angelfish?"

Ms. Thomas explains, "These are all good suggestions. Let's decide which types of fish we want, where they would live in the aquarium, how big they're going to be, and how they will interact with other fish. So far we have two types, angelfish and goldfish. Let's figure out their characteristics as well as suggest some more kinds of fish."

After much discussion the students and the teacher decide on the three following characteristics: location, size, and behavior. The class reached the decision that they wanted an aquarium that was peaceful and had as many fish as possible located throughout the tank. Ms. Thomas then asked her students to complete the semantic feature analysis based on their existing knowledge about the various types of fish that they listed.

Once the students completed their organizer she said, "Now, I would like you to use the variety of texts about fish located in the science center to check your predictions and complete your semantic feature analysis."

The students enthusiastically began their scientific investigation using the selected resources provided by the teacher. Once all students had completed their organizer Ms. Thomas shared her completed organizer so that the students could compare their own research with hers (see Figure 5).

Figure 5
Semantic feature analysis

Types of fish	Location			Size			Behavior		
	Bottom	Middle	Top	Small	Middle	Large	Peaceful	Aggressive	Violent
Algae Eater									
Angelfish									
Black Molly									
Dwarf Gourami									
Goldfish									
Guppy									
Neon Tetra									
Piranha									
Siamese Fighting									
Zebra-fish									

Teaching vocabulary versus incidental learning of words through wide reading should not be viewed as competing philosophies. Some students may not benefit from incidental learning but do benefit from teacher-directed instruction that initially teaches word meaning by application in meaningful narrative and expository text (McKeown, 1993). Much of the criticism leveled at vocabulary teaching concerns practices in which students are not actively involved in the personal discussion and use of words, such as defining words using a dictionary and writing sentences for those words. Any instructional practice must be called into question that neglects the teaching of words in meaningful context and fails to immerse the students in vocabulary-rich activities. Vocabulary instruction that is geared to the active process of learning and connects new information to previously learned experiences provides the means for students to make the connection between new words and their past experiences. The key to successful vocabulary instruction builds upon students' background knowledge and makes explicit the connections between new words and what they already know.

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