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Patricia Cunningham
Wake Forest University

Sharon Crawley
Augusta College

Lee Mountain
University of Houston

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VOCABULARY SCAVENGER HUNTS: A SCHEME FOR SCHEMA DEVELOPMENT

Patricia Cunningham
WAKE FOREST UNIVERSITY, NC

Sharon Crawley
AUGUSTA COLLEGE, NC

Lee Mountain
UNIVERSITY OF HOUSTON, TX

There are in education some accepted "truths" which are generally believed by teachers. There are also some "truths" based on research findings. Occasionally these two separate entities come together, and we have the rare occurrence of a truth generally believed by teachers and overwhelmingly supported by empirical research. One of these rare occurrences of truth accepted by both teachers and researchers is that what you know about something determines how much you will comprehend when reading about that topic. Teachers refer to this prior knowledge as "background experience." Researchers use the term "schema" and have demonstrated empirically the crucial role in reading comprehension which this prior knowledge plays.

Now, your background of experience or schema for a particular topic includes both general knowledge of that topic and specific word meanings. If you are about to read something about "Weather," for example, you reach into your mind and pull out your "folder of information" about weather. This folder contains general knowledge of the topic "Weather"—different weather is generally associated with different seasons; weather affects how people live; weather can be very destructive. Your mental weather folder also contains meanings for weather-related words such as celcius, temperature, farenheit, humidity. As you read about "Weather," you check to see what general information you already have stored in your mind and you add a thing or two. The stored word meanings allow you to comprehend what you are reading, and you may add a new word meaning or broaden a word meaning you already have.

Imagine now that you are faced with the task of reading and comprehending this passage:

The centroid solution involves placing the first reference axis through the centroid of the configuration of vectors; obtaining a table of residual correlations, which are subject to certain adjustments; placing the second factor through the centroid corresponding to the table of residual correlations; and continuing the process until the magnitude of the residuals can be considered inconsequential.

(Ferguson, 1971, p. 416)

Can you cover the passage and explain it in your own words? If not, why not? Did you go looking in your brain for your folder of information about centroids and find an empty folder? Perhaps you don't even have a folder of information started for this important topic. Could you start one based on this passage?

For years teachers have known that you had to build background of experience before reading if children were to be able to understand and store in memory the information read. Teachers have also known that the best way to build this background of experience was to provide real experiences. Thus, teachers have taken children on field trips to farms and factories and have helped children develop general information and specific word meanings as they had this direct experience with the topic under study. When visits outside the classroom were impossible, teachers have gathered people and objects and brought them into the classroom. For those topics where the children could not be taken to the real thing nor could the real thing be brought to them, teachers have relied on pictures—films, filmstrips, photographs and illustrations. Teachers have long intuited that this indirect visual experience was "the next best thing to being there."

There's only one difficulty that teachers express with providing objects and pictures of objects to help children develop general information and word meanings for a topic under study. This difficulty relates to the vast investment of time teachers must spend in rounding up these objects and pictures. Vocabulary scavenger hunts are ways of gathering objects and pictures related to a topic under study in which the students, NOT the teacher, do the hunting and gathering. The Reading Teacher (Vaughan, Crawley and Mountain, 1979) introduced vocabulary scavenger hunts as a multiple-modality approach to word study. The approach is even handier, however, as a scheme for schema development.

Imagine that you are about to begin a science unit on weather. You look through the text your children are going to read, preview films, filmstrips and other teaching aids, and make a list of the unfamiliar vocabulary you will teach as you increase their store of information on the topic of weather. Your list includes the words evaporation, condensation, cirrus clouds, stratus clouds, precipitation, temperature, humidity, barometer, thermometer, cyclone, tornado, hurricane, meteorologist, wind vane, rain gauge and a variety of other words.

Of these words, some can be represented by pictures and objects (direct experience). Other words such as evaporation, condensation, precipitation, temperature, and humidity cannot be represented directly or indirectly. Take all the words on your list which can be represented by pictures or objects cirrus clouds, cumulus clouds, stratus clouds, barometer, thermometer, cyclone, tornado, hurricane, meteorologist, wind vane, rain gauge and add to these some familiar, picturable words related to the topic of weather such as snow, ice, lightning, fog, rainbow until you have a list of 15-25 picturable words which relate to the topic of weather. You now have your list of things for which your students will scavenge!

Before you hand out the first set of words, be sure that your students understand what a scavenger hunt is. Some of them will already know, but for others your vocabulary scavenger hunt may be a "first."

One sixth grader, when asked about her previous scavenger hunt experience, told the class, "It was on a church picnic. The leader gave everybody the same list of things to find—acorns and leaves and stuff. I read my list, and I decided which things would be easy to find and which things would be hard to find. Then the leader divided us into teams. My team captain asked me which things I could find, and he put my name down for those things. The other people said what they could find, and away we went. My team brought in everything on the list, so we won the scavenger hunt." (Mountain and Vaughan, 1979)

When you divide your class into teams, you will want the groups to be heterogeneous. Ideally, each group should include at least one good reader to help the other students read unfamiliar words and one good leader to keep the group moving productively through discussion of the words and assignment of "who brings in what". With one good reader and one good leader, each group can comfortably absorb some students who will profit from peer help. Also, spreading around your strong students enables the groups to compete on an evenly matched basis, since no one team has all the top students.

Assign your students to teams of five or six, and provide each team with the list. Explain that in a week the teams are to bring in a picture and/or object representing as many of the items on the list as they can find. To the students' inevitable question, "How can I bring in a hurricane?" your response will be, "You can bring in a picture of a hurricane." Two points are given for each object and one point for each picture. Pictures can be illustrations, photographs, tracings, or drawings as long as they actually represent the word.

Allow the teams time to discuss what the different words mean and who might be able to find an object and/or picture representing each. Of course, if some of the words are truly unfamiliar to your students, a question such as "What's a rain gauge?" will arise. Depending on the maturity of your students and on whether this is their first or their tenth scavenger hunt, you may choose to respond by explaining what each word means or by saying, "I guess you will have to look it up somewhere. It's hard to find a picture or an object which represents something if you don't know what that something is." This response should send your teams to their dictionaries or other reference sources.

Allow the teams to meet several times during the week they are scavenging. They should check things off the list as pictures and objects are found. Do not, however, allow any pictures or objects to come to school before the appointed date. Teams should be cautioned to keep secret what they have found and where they found it. On the appointed day each team should assemble and show their pictures and objects. The teacher should total the points for each team (two per object, one per picture—only one picture or object per word per team). The team with the most points is the winner.

Now winners like to get a prize—and what better prize than being allowed to create the bulletin board. "What bulletin board?" you ask. Why, the weather bulletin board, of course. You certainly are not going to let all these pictures go to waste! The winning team should design the bulletin board so that each word is printed in large letters and the different pictures which represent it are displayed with the word. The artistic design of the bulletin board is simple since it is determined by categorizing the words—types of clouds, weather instruments, storms, etc. (Any word without a picture might be displayed by its lonely self—challenge to someone to find a picture).

"What about the objects?" you ask. Well, any objects which are valuable, dangerous, or alive, must, of course, be taken back home. But the rest can be displayed on the table you push underneath the bulletin board. Naturally, you will need in big bold letter someplace: Weather Bulletin Board Created by Winners of Weather Scavenger Hunt and the names of all the proud winners.

You are now ready to begin your unit on Weather. What's more important—your students are now ready. Having spent the last week or two collecting objects and pictures related to the topic of weather has increased their general knowledge of that topic. Perhaps they talked to the local meteorologist or watched the weather report or even read an intriguing section of the reference book from which they traced their picture of cirrus clouds.

You have increased their interest in the topic of weather. You also have this marvelous bulletin board with representations of the portion of your meaning vocabulary words which can be represented by objects and pictures. Some of your meaning vocabulary which could not be directly or indirectly represented can be easily understood with reference to the pictures and objects. Precipitation is a form of moisture such as rain or snow. Temperature is measured with thermometers.

Now that the children have enjoyed their first scavenger hunt and have begun their actual study of weather, what next? Well, perhaps you plan to study Mexico in social studies soon and your Mexico topic includes such words as pinata, pyramids, castanets, and tacos; or maybe you are developing a topical word-set on animals with one of your reading groups, and words such as polar bears, cobras, and gerbils are part of that topical word set. The children will certainly be ready for another scavenger hunt and, this time, having learned how to hunt for objects and pictures and how to find out what unfamiliar words mean and working to create the next bulletin board, they will be much more ready to get right to work on locating these representations.

It's easy to add variety to your vocabulary scavenger hunt by changing your methods of grouping your teams. Consider these possibilities:

1. Grouping by Initial of Last Name

The randomness of the alphabetical listing of students in your gradebook usually insures that your groups will be somewhat heterogeneous if you divide your class into three or four teams by the last initial (A—H, I—P, etc.).

2. Grouping by color of Clothing

A quick glance around the room will tell you whether you could get evenly matched teams by saying, "Everyone wearing blue jeans will be on Team 1. If you're wearing brown pants, you'll be on Team 2. Everyone else is Team 3."

3. Grouping by Month of Birthday

After the first couple of vocabulary scavenger hunts, you will want to develop new leaders. So you might take a chance on grouping all the people with January, February, and March birthdays together, even if that group doesn't contain one of your established leaders.

(Mountain and Vaughan)

To field-test vocabulary scavenger hunts as a scheme for schema development, nine teachers in a metropolitan school district volunteered to try the vocabulary scavenger hunt strategy, as described, with three third-grade classes, three fourth-grade classes, and three fifth-grade classes. Each teacher designed four or five word lists to correlate with material she was teaching in the content areas (e.g., nutrition, holidays, transportation, clothing, weather). The total number of words presented by each teacher during the ten weeks of the field test ranged from 77 to 84. The average was 80.

Each teacher designed a simple pretest/posttest instrument to ascertain her pupils' familiarity with the scavenger hunt words. The test offered a multiple choice selection of a category for each word, as follows:

- | | | | |
|------------|---------|----------|-----------|
| 1. turban | (a) hat | (b) coat | (c) shoes |
| 2. oxfords | (a) hat | (b) coat | (c) shoes |

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|-----------------|-----------------|--------------|------------------|
| 25. goblin | (a)Thanksgiving | (b)Halloween | (c) Columbus Day |
| 26. Santa Maria | (a)Thanksgiving | (b)Halloween | (c) Columbus Day |

The percentage gains in class means from pretest to posttest ranged from 19 to 33 percentage points. The average gain was 25 points.

These field-test numbers, however, tell only a small fraction of the vocabulary scavenger hunt story, according to the reports from the teachers. The vocabulary gains were desirable, of course, but they were only a minor part of the major benefits connected with the scavenger hunt approach. The teachers identified these three major benefits: (1) time was saved; (2) students were motivated; and (3) comprehension was enhanced. During the weeks of these field tests, the nine teachers invested no time at all in hunting for visual aids and realia. Their students were motivated to do the whole job for them—with enthusiasm. The students were also able to do a better job of comprehending their reading material, since the scavenger hunt experiences had put some content words into their mental file folders.

The teachers felt that the bulletin boards and display tables

were excellent instructional aids. Categorizing the words and pictures for display gave pupils an awareness of the structure of the topic. They were better able to write about the topic with the words in easy view. Starting with a "factstorming" list of words is a good procedure for incorporating schema theory into a writing approach to reading comprehension (Hennings, 1982).

The schema research (Guthrie, 1978) that supports vocabulary scavenger hunts points up a truth which teachers hold to be self-evident—that the more you know about a subject, the better you can comprehend what you read about that subject. Another self-evident (and research-evident) truth related to vocabulary scavenger hunts is that tactile and high visual-imagery experiences are beneficial to comprehension (Paivio, 1971; Bower, 1972; Wolpert, 1972), so the hands-on approach to gathering pictures and objects is educationally sound. In short, both theory and practice suggest that vocabulary scavenger hunts are an instructional strategy worth trying in your classroom.

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