Vocabulary for Content-Area Learning

FEATURE
Content-Area Vocabulary: A Critical Key to Conceptual Learning
by Janis M. Harmon and Karen D. Wood

CLASSROOM VIGNETTES
Unlocking the Mystery of Mathematics: Give Vocabulary Instruction a Chance
by Bizzie Cors

Strategies to Teach Vocabulary in the Content Areas
by Mark Dewar

A LOOK AT THE OGT
Building Vocabulary in the Content Areas
by Carol Damian

FOR YOUR BOOKSHELF
Books by Harmon, Wood, & Hedrick and Allen
by Beth Munger

FROM THE ORC COLLECTION
More Resources for Vocabulary for Content-Area Learning
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Learning new words is a cumulative task that takes place gradually over time. We learn words in incremental fashion by internalizing new understandings in each subsequent encounter with the words. The meanings become deeper and more sophisticated as we are exposed to the words multiple times in different contexts and as we actively use the words in reading, writing, speaking, and listening. For example, our understanding of the term *global warming* is far more refined, complex, and elaborate as adults than what we would expect middle school age students to have acquired. As a result, our knowledge of specific words at any time can shift on a continuum ranging from no knowledge to thorough understanding (Beck, Perfetti, & McKeown, 1982). Therefore, in regard to teaching words in any content area, we need to keep in mind that different students will have different levels of understanding about a term and will internalize new information through each successive engagement with the term.

Words with multiple meanings are common in the content areas. Many words students encounter in mathematics, science, and social studies have multiple meanings, or are *polysemous*. These terms represent different meanings depending upon the content areas in which they are used, and therefore can be confusing to some students, especially students whose first language is not English. We must be vigilant to clarify the meanings of even simple terms that we might assume all students know. For example, in mathematics the word *scale* as in *scale drawing* has a different meaning in biology when referring to the scales on a fish or snake and in music when talking about a series of musical steps.

Affixes and root words need to be taught. A large percentage of the words and terms found in the different content areas contain meaningful parts that can be taught. In fact, Nagy and Anderson (1984) claim that more than 60 percent of the words students meet in academic texts have meaningful roots and affixes that can be learned through direct instruction. This is especially
true for social studies words, given that Milligan and Ruff (1990) found that 71 percent of the terms in social studies textbooks contained teachable roots and affixes. For example, teaching students that demo refers to “people” can help students learn democracy, demography, and endemic. Another example is merc, meaning “trade,” as in merchant, merchandise, and mercantile.

**Words need to be taught in relation to other words.** Words representing concepts are not taught in a vacuum, but rather in contexts that illustrate how they are associated with other words and ideas. This feature of word knowledge is at the heart of effective content-area teaching and critical to vocabulary building. For example, science classes studying the causes and effects of earthquakes will more than likely encounter other related terms such as tremors, seismic waves, Richter scale, and magnitude. In mathematics, understanding how to solve linear equations involves having a knowledge base about factors, variables, equality, and coefficients. These examples show how words and their meanings are intricately related to each other and how these relationships are tied to conceptual understanding. It is important then to help students understand these relationships and connections.

**Productive vocabulary instruction must extend beyond word definitions.** Research has shown us that there are limitations associated with using definitions alone to teach word meanings (Miller & Gildea, 1987; Scott & Nagy, 1997) and that definitions by themselves are unlikely to enhance comprehension (Baumann, Kame’enuu, & Ash, 2003). The pitfalls of definitions are obvious to all of us. We can all remember having to look up a word in the dictionary, copy the definition, and then write a sentence using the term. Because many times we did not really understand the definition, our sentences left a lot to be desired. While such activities occurred (and in some instances still do) in language arts classes, definitions representing concepts taught in content-area classes can also constrain learning. For example, when the term hinterland is defined as “undeveloped land away from a coast or land that is far away from large metropolitan areas,” students living in inner cities may think that hinterland refers to bedroom communities that are located on the outskirts of major cities. We must be very cognizant of how students might interpret a word definition that makes sense to us but may be misleading and confusing to those with less background knowledge.

**Instructional Framework**

Effective vocabulary instruction across subject-matter disciplines incorporates both broadly defined learning opportunities and explicit instruction in word-meaning acquisition. Broadly defined learning opportunities include the incorporation of wide reading in content classes as well as word consciousness. Reading widely about a topic across a variety of texts provides students with multiple exposures to newly learned words along with opportunities for incidental word learning to occur. In fact, in their studies, Nagy and Herman (1987) and Sternberg (1987) found that upper grade students of varying ability levels learned new words incidentally through reading and listening. In addition, broad learning opportunities include the development of word consciousness or awareness, where students learn habits of attending to new and interesting vocabulary that will enable them to acquire appropriate language for communicating in particular content areas (Scott, Skobel, & Wells, 2008; Stahl & Nagy, 2006). In other words, content-area teachers can promote vocabulary learning by encouraging students to read widely about topics and by promoting an awareness and enthusiasm for learning new words.

The other component of an effective vocabulary program in the content areas involves explicit instruction. We describe one structured lesson format using steps which are typically found in general lesson plan formats and also provide a framework for incorporating vocabulary. The steps include preparation, explanation, application, and reinforcement (P.E.A.R.).

**Preparation.** In this step, teachers select the words to teach. These words and phrases should be those most critical to understanding the concepts in the passage or learning session and should be limited in number. Too many targeted words can be overwhelming to students, especially those who struggle with reading. This step also includes assessment of student background knowledge about the terms. One useful assessment tool is the knowledge rating scale (Blachowicz & Fisher, 2006). Figure 1 provides an example of a knowledge rating scale for geography terms. This activity enables students to determine their own knowledge about the terms and also serves as a summative assessment to help students evaluate their own learning.
**Content area:** world geography

<table>
<thead>
<tr>
<th>Word (or term)</th>
<th>I know this word (or term). It means . . .</th>
<th>The word (or term) looks familiar.</th>
<th>I do not know this word (or term).</th>
<th>New Information from the text</th>
</tr>
</thead>
<tbody>
<tr>
<td>urban</td>
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<td>urbanization</td>
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<td>urban sprawl</td>
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<td>interdependent</td>
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<tr>
<td>megalopolis</td>
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<tr>
<td>textiles</td>
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<tr>
<td>erable</td>
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<tr>
<td>Corn Belt</td>
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<tr>
<td>Dairy Belt</td>
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<tr>
<td>global warming</td>
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<td>smog</td>
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<tr>
<td>gentrification</td>
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<tr>
<td>superpower</td>
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<tr>
<td>trade deficit</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>North American Free Trade Agreement</td>
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</tbody>
</table>

**Explanation.** Once teachers have selected the vocabulary, the next step is to introduce the words and terms to the students using clearly understandable definitions—what Beck and her colleagues call student-friendly definitions (Beck, McKeown, & Kucan, 2002). For example, for the term *urban sprawl,* instead of the definition “the unplanned, uncontrolled spreading of urban development into areas adjoining the edge of a city,” a more easily understood definition could be “a word that describes what happens when a city starts spreading farther and farther out into the area around it.” These student-friendly definitions also need to be accompanied by supportive instructional contexts (Graves, 2006). In this case, the teacher can show students various photographs that depict *urban sprawl.*

**Application.** After discussing the word meanings, students can then apply the words and terms in meaningful activities. These activities are designed to move students’ interaction with the words beyond the definitional level to higher levels of cognitive processing. For example, the following questions and prompts require students to have a working knowledge of the words in order to provide reasonable answers (Beck et al., 2002):

- **Meaningful-use prompts**
  - Things you would expect to see in an *urbanized* area:
  - Examples of textiles:
- **Statement completions**
  - *Urbanization* creates major changes in the landscape of an area because . . .
  - *Urbanization* may be contributing to *global warming* because . . .
- **Word associations**
  - Which word is used when talking about renovating old warehouses in inner cities?
  - Which word would you use when talking about buying and selling goods from other countries?
- **Meaningful questions**
  - Would you expect to find *textile* mills in a *megalopolis*?
  - Would *urban sprawl* have an impact on the *Dairy Belt*?
  - Are the people living in the *Corn Belt* affected by *NAFTA*?
If we only ask students to provide definitions for terms, then they can memorize definitions, pass the tests, and not really have an understanding of the concepts. However, questions and prompts such as those above require that students apply what they know about the terms in order to successfully answer them. Such responses are more indicative of learning. Other activities for relating, connecting, clarifying, and applying word meanings are described in Instructional Strategies for Teaching Content Vocabulary, Grades 4–12 (Harmon, Wood, & Hedrick, 2006).

**Reinforcement.** In this last step, teachers review newly learned words and terms to help students internalize word meanings. Writing activities that are interesting can serve to reinforce vocabulary. For example, the cubing activity (Bean, Readence, & Baldwin, 2008) illustrated in Figure 2 requires students to examine a concept from different dimensions. Students demonstrate their understanding of a term by describing, comparing, associating, analyzing, applying, and arguing for or against it.

**Term:** market economy

<table>
<thead>
<tr>
<th>Describe it.</th>
<th>Compare or contrast it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A market economy is one type of economic system. An economic system is the way in which a country manages its money, materials, and labor. A market economy allows the people to freely choose what to buy and sell.</td>
<td>A market economy is similar to capitalism and free enterprise. A market economy is different from a planned or command economy in which the government decides what to buy and sell and at what price.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Associate it.</th>
<th>Analyze it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think a market economy allows people the opportunity to earn more money by opening their own businesses.</td>
<td>There is competition in a market economy, and this can keep prices down. The producers of goods and services listen to the wants and needs of the consumers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Apply it.</th>
<th>Argue for or against it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every time I go shopping for a new video game, I can be grateful for the market economy in America. If it wouldn’t be for this type of economy, I think the selection of games would not be as wide as it is at the stores.</td>
<td>I support a market economy. It gives me many choices when I am looking for things, and it gives me the opportunity to open my own business if I like.</td>
</tr>
</tbody>
</table>

Another example is the R.A.F.T. activity in Figure 3 (Santa, Haven, & Harrison, 2008). R.A.F.T. stands for role, audience, form, and topic. Students select one of the tasks to write about, and they use newly learned vocabulary in the writing.

### Content area: world geography

<table>
<thead>
<tr>
<th>Role</th>
<th>Audience</th>
<th>Format</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naturalist John Muir</td>
<td>Lumber industry</td>
<td>Commercial</td>
<td>Conservation of natural resources</td>
</tr>
<tr>
<td>Meteorologist</td>
<td>People along the Texas Gulf Coast</td>
<td>Broadcast script for television</td>
<td>Approaching category 4 hurricane</td>
</tr>
<tr>
<td>Salmon</td>
<td>Grand Coulee Dam</td>
<td>Brochure</td>
<td>Difficulties caused by the dam</td>
</tr>
<tr>
<td>Director of the National Park Service</td>
<td>Outdoor enthusiasts</td>
<td>Page in a guidebook</td>
<td>3 most popular hiking trails in the United States</td>
</tr>
<tr>
<td>Tour director</td>
<td>People who like to go on tours</td>
<td>Internet website</td>
<td>7-day tour of western Canada</td>
</tr>
<tr>
<td>Lewis of Lewis and Clark</td>
<td>President Thomas Jefferson</td>
<td>Letter</td>
<td>Request for more money to continue the expedition to the south</td>
</tr>
<tr>
<td>Mountain climber climbing Mt. Everest</td>
<td>Himself or herself</td>
<td>Poem</td>
<td>Experience of climbing the mountain</td>
</tr>
</tbody>
</table>

- Vocabulary terms to use in your R.A.F.T. writing:
- Ideas to include:

Figure 2. Cubing (Bean, Readence, & Baldwin, 2008)

Figure 3. R.A.F.T. example (Santa, Haven, & Harrison, 2008)
Closing Remarks

In this article, we have presented important features that serve as guidelines for implementing effective vocabulary instruction in content-area classrooms. We have also outlined a lesson plan format that highlights the use of understandable word definitions and the application of meaningful-use activities that provide students with opportunities to internalize word meanings in relation to the concepts they represent. These instructional suggestions apply across all content areas to help students develop the appropriate language needed to learn even more sophisticated and complex understandings about various subject-matter topics.

References


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Unlocking the Mystery of Mathematics: Give Vocabulary Instruction a Chance

by Bizzie Cors

Let me begin by setting the scene: It was late fall last year. Sitting down one evening with a stack of honors geometry tests staring at me, I knew I was in for several long hours of grading. I began penning the same words on many of the papers, “Please, read the directions,” “Is this what the question is asking?” and “You need to remember characteristics of parallel lines.” I had just spent the past three weeks teaching about congruent triangles. These tests represented what I had seen over the past seven years: the same misconceptions, the same errors, the same number of students who “got it,” and the same number of students who were already lost. It seemed that most students were not recalling the concepts or terms from the previous chapters. It was only November, and yet here it was again—another year of many students believing that geometry was a subject of memorization and mystery.

I walked into class the next day with my speech in mind about how “you have to study more and make more effort in class,” a speech I was going to give before I handed back the tests. But before class began—and before I had a chance to make my speech—a student approached me and asked, “Can I throw away all the information from the congruent triangle chapter now?” This young lady was one of my top students; surely, I thought, she understands the importance of keeping all this math work to refer to later. I looked at her and replied, “Why would you ask that?” Politely she answered, “I don’t need that information anymore since we will be on the next chapter today.” I stared at her, and I could not respond. One of my top students, and yet she hadn’t made the connection of how to construct meaning and understanding in mathematics. Okay, I jettisoned the speech. It was time to ask myself some important questions:

Why didn’t she think she’d have to refer to the information in this chapter again?
Do the students have a clear understanding of the purpose of the daily lesson?
How can students make connections and keep their current background knowledge in math accessible?

After days of thinking, reading, and soliciting colleagues’ input, it was time to develop a new approach. I was overwhelmed. Deciding what to do was not going to be an easy process. I needed to break the learning process down to the foundational level of understanding for all students. I needed to level the playing field for all learners.

With a distinctively large gap in the understanding of geometry that already existed among students, what could I do that could begin to have an impact on the learning of every student? The answer was vocabulary instruction. True, I had already asked the students to write the definition of different terms, draw pictures, write in their own words the meanings, and supply synonyms. What I found out was that these techniques didn’t work well. Yet, wasn’t I using researched-based best practices to instruct vocabulary acquisition? Even though I was making the kids “do” vocabulary work, they were studying the words in isolation; they were not learning them in a meaningful context or making authentic connections. This is when I got the idea to teach vocabulary as an integral part of every chapter, not just as a sidebar or an add-on.

I understood that students needed to construct meaning for all vocabulary terms and connect to prior knowledge as well as to new concepts and algorithms. This then led me to the realization that I would have to create a process to teach vocabulary development. What would I need to provide in the classroom? I sketched out the issues that had to be addressed:

• The vocabulary must be constantly visible.
• Each strategy has to be explicitly modeled and practiced.
• As part of the process of defining terms, students need to constantly revise their definitions until each student has created the meaning.
• Students have to be taught questioning techniques on how to explore the meaning of the words and the mathematics involved.
• Students need to discuss, revise, and build upon the pictures they’ve made of each term.
• Students also need to summarize and reflect on how the terms connect to solving, proving, and evaluating math problems.

Sticky-Note Chain Process

The method I chose to use involves the liberal use of sticky notes in before-, during-, and after-reading strategies.
Before Reading: I select the key vocabulary words before the reading of each section. The students write each word on sticky notes.

During Reading: The students read the section in the textbook and follow the procedures below. On a sticky note for each vocabulary word, they should:

- Write any signal words that can help define the given words. Formal definitions of the word are not to be written.
- Write any word parts that may help in understanding the word. Include any pictures.
- Write any previously defined concepts or terms related to the word.
- Write the problems in the homework that use the word. (I have them write just the problem numbers; we reference them when we go over the lesson to develop a pattern of key vocabulary words and to open discussion.)

After Reading: At the beginning of class, the students—working in groups of three—discuss the information collected on their sticky notes. They are to follow these procedures:

- Each student reads aloud the information on his or her sticky note without comment or discussion from others in the group.
- Each student answers the questions and follows the directions:
  - Are any of the key words connected? If so, place the sticky note in a chain. Draw an arrow to each word, and write the connection along the arrow. 
    **Example:** *Congruent* would be connected to *Equal* by the phrase “compares like quantities.”
  - In the homework problems, did I need to know the definition of the key word to understand the method used in solving the problems? If yes, list the specific problems. How do the directions for the problems help define the word? Write all information discussed on the sticky note for that word.
  - How do the key words relate to the title of the chapter?
  - Is there anything missing that would help me understand the key word?

Discussing their responses with one another, the group members continue to use this process of writing, adding, and moving sticky notes throughout the chapter. As the instruction of the chapter proceeds, each student continues to monitor his or her sticky-note chain and make revisions. There are no set answers at this point.

At the end of the chapter, one day is devoted to the evaluation and synthesis of the terms. This day the students, still working in their small groups, place their sticky-note chain on a large white paper with the chapter heading written at the top. They begin to place the sticky notes in “chunks” according to how they believe the terms relate. During this time, there is a lot of discussion and formative assessment taking place as I walk around the room. The process takes about twenty minutes.

I then hand out a formal definition of each key word to every student. The students review the definitions and add anything to their own definitions that clarifies the meanings. The concluding piece is assigned as homework. For their assignment, the students draw on their work throughout the chapter to write their own example of a problem that relates to or directly uses the vocabulary word—one problem per key vocabulary word.

For the final product, each group puts together a graphic organizer complete with sticky notes, connections, and problems. For each chapter, the graphic organizer looks different, and I’m always surprised at the connections the students have made through this constructivist approach to learning vocabulary.

The need to be flexible while guiding the students is critical to this process. In the beginning, the process is time consuming, but as the students develop the skill of asking questions and exploring the meaning of the terms, the quality of time on task increases. I no longer lecture and repeat definitions and concepts, but teach the application and process of mathematics.

Outcomes

This process was different and sometimes uncomfortable for me as a traditional classroom teacher of mathematics. But the positive outcomes surpassed the struggle of implementation. This process achieved the following:
• Vocabulary in mathematics became an integral piece for all students in creating understanding and meaning in mathematics.
• The students made authentic connections from one section to another using the vocabulary to clarify, solve, prove, and evaluate problems in mathematics.
• The sticky-note chain created a systematic approach that made visible the ongoing process of acquiring vocabulary understanding.
• Students began to ask questions to connect conceptual understandings of mathematics. An example: “I think scale factor and slope must have something in common.” This statement was made by a student reviewing her sticky notes on the two terms. When I demonstrated the equations, students immediately were able to relate the two concepts.
• Solving word problems became fun and less difficult for most students. When asked why this wasn’t a struggle, a student responded, “I have read so much math, I know what to look for now.”

In conclusion, when I taught math in the traditional mode, I was focused on covering the curriculum and providing the students with the knowledge and strategies to solve problems. This meant I did all the work, rather than actively involving the students in their learning. Changing my approach to instead offer students an opportunity to develop their own meaning opened a new way to provide the information and structure for all learners. This is a process that has proved to stimulate and encourage all learners and help them know that mathematics is a process and not magic. The results have been great!

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Some believe, and of course it isn’t any of us reading this article, that literacy activities and lessons belong in the English classroom. I completely agree with those people—they do belong there, but not just there. Literacy should be taught in any classroom regardless of the subject. We all need to do everything we can to help our students be effective readers.

Effective readers in the content areas read for a purpose—perhaps to answer a question or to find a main idea. I currently teach eighth grade American history at Fostoria Middle School and have found a real need for effective reading strategies. To further convince myself of the importance of literacy, I looked at a page in my social studies textbook and realized that there were words within the text, whether highlighted or not, that were important to my students’ understanding of the chapter. It reminded me again that a key component to literacy in all content areas is vocabulary. Studying vocabulary is vital to a student’s understanding of a main idea or indicator or any subject. How can students understand the effects of global warming if *greenhouse effect* means nothing to them except a house looking green when it is not?

I have found a number of vocabulary learning strategies that can be implemented in some new and efficient ways in the classroom.

**Triple-Entry Vocabulary Journal.** My personal favorite, one that I brought back with me from the Taking Action on Adolescent Literacy workshop, is the triple-entry vocabulary journal. This strategy has been something that our literacy team has shared with many teachers in our middle school and that we have found to be very successful. Obviously, you know by its name that there are going to be three entries for each vocabulary term in these journals. What is not obvious—but is a great feature—is that teachers can adapt this journal to fit and be appropriate in any subject or situation.

Keeping that in consideration, I will explain what I have found works best in my classroom. Figure 1 is a sample journal page.

As you can see, in the first column students write the term or person, in the second they draw a picture or symbol, and in the third they write the definition. What sets this journal apart from others is the second column, where the students are directed to draw a symbol or picture that will help them remember the definition. At first, students will struggle with this because they will want to draw a picture relating to the term instead of the definition.

The journal page in Figure 1 is done at a basic level. This student understood most of what was expected, but there is some misunderstanding of the purpose of the pictures. For the term *Peninsulares*, the student drew a picture of a peninsula, which, while related to the term itself, will likely not help the student remember that *Peninsulares* was the highest social class in the Spanish colonies. This is the difference between drawing pictures to help remember the definitions and drawing pictures related to the terms themselves. With quick intervention, this student understood the mistake and corrected the drawing.

When given an example of a picture that might be used to remember the definition, students usually will catch on. It is key to ensure that students understand that there are no right or wrong pictures as long as they relate to the definition. Everyone has a different way of remembering things. When student A draws a log and student B draws a dog for the term *biotic factor*, they are both right. A biotic factor is any part of the environment that is living or was once living. Both pictures accurately depict the definition’s meaning, and each student has individualized his or her own memory cue. The idea here is for the student to become familiar with the terms or key people while at the same time constructing a study sheet, whether it be for a vocabulary test or for the chapter test. By includ-
ing pictures, students can encode the information into memory in two different ways: by drawing and writing the definition.

The journal page in Figure 2 is done at a level that I consider proficient or complete. You can see that the student effectively draws pictures to help remember the definitions of the words we are studying instead of just drawing pictures about the terms. The pictures here will allow this student to use the triple-entry vocabulary journal as flash-card-type review material.

Anticipation Guide. Some literacy strategies I use are "broad spectrum." They include but are not exclusive to the teaching of vocabulary. A strategy that has worked very well to help my students read with a purpose—and that often includes understanding and learning vocabulary—is the anticipation guide. The anticipation guides I use are simply true-and-false questions from the chapter we are about to read. I have found that my students love these guides. Their positive feelings may be linked to the fact that it is okay for them to be wrong; whatever the reason, I have found that they are more actively read-

Essentially, for me, vocabulary is where it all starts. By beginning every new topic using this triple-entry vocabulary journal, I am able to work with the students to help them understand the vocabulary that we will be seeing for the next few weeks. My vocabulary focus, thus, becomes the foundation for further lessons down the road. For example, studying the vocabulary for the English colonies, my students can answer an anticipatory guide question without saying, "What does impose mean?" or "I don’t get what they mean by accumulate goods?" I try to help them understand that it is difficult to effectively communicate—by spoken word or in writing—if they do not know what words to use. I broaden the idea of the importance of vocabulary by stressing that the more words that we all make a part of our vocabularies, the better we will be able to understand what we read and to express our ideas.

Knowledge Rating Chart. Another useful strategy for teaching vocabulary is the knowledge rating chart. On this chart, students list terms, indicate the depth of their knowledge of the meanings, and then write down the meanings taken from their text. This has worked well for vocabulary study and also is useful in studying events, concepts, and so on.
What I have learned

When I started incorporating these strategies into my units, the students had some difficulty with them, merely because the strategies were new to them. “Hang in there,” I encouraged them. “We know that an expert at anything was once a beginner!”

They did hang in there, and I am amazed at what my kids are capable of achieving. I am now a firm believer that if we don’t teach literacy, our students’ abilities to learn the content will suffer. In my experience, using a few strategies on a consistent basis will go much farther than trying a new strategy each week. The idea is to find strategies that fit us and our students and stick with them. Working with literacy should not be looked at as another thing added to the plate of things we teachers need to do in our classrooms; it is the plate—it holds together everything we do.

Mark Dewar has been teaching social studies at Fostoria Middle School for two years. He is a graduate of Bowling Green State University and is currently working on a pilot program with Honeywell and SAE International called Student Automotive Design Challenge, where students are challenged with interdisciplinary skills each day. The challenge is an international competition for the best new toy car.
Ohio Graduation Test has general, as well as specific, vocabulary, language, and print symbols or graphics to identify and describe important concepts, events, processes, and principles.

To be able to understand the OGT assessment items—and answer them correctly—students must be able to read reflectively, write the words (or appropriate symbols or illustrations), and put correct meaning in the message (their answers). That is, students need to be able to use the language—the “content vocabulary”—appropriate to the topic.

You can help all students acquire the necessary content-relevant vocabulary and language skills needed for the OGT by providing them with instruction in content and vocabulary literacy and specific strategies for skill application. Using the chart below, let’s consider some skills needed for broad-based literacy for all content areas, specific content literacy, and effective content learning:

<table>
<thead>
<tr>
<th>Developing Vocabulary/Language and Content Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Broad-Based Literacy Skills</strong></td>
</tr>
<tr>
<td>Reading and writing fluency</td>
</tr>
<tr>
<td>Awareness of text organization</td>
</tr>
<tr>
<td>Synthesizing</td>
</tr>
<tr>
<td>Organizing</td>
</tr>
<tr>
<td>Reflecting</td>
</tr>
<tr>
<td>Processing</td>
</tr>
<tr>
<td>Connecting to prior knowledge</td>
</tr>
<tr>
<td>Summarizing</td>
</tr>
<tr>
<td>Writing, listening, viewing, and speaking</td>
</tr>
</tbody>
</table>

From the chart, we can begin to see a pattern of some basic skills needed as the foundation for virtually any classroom (and lifelong) literacy development and learning, as well as examples of specific types of skills for individual content areas. The chart is by no means all-inclusive. All of you could likely add items for skills and learning that are either broad-based or specifically needed in your subject areas. Redesigning or adding to the chart would be a worthwhile exercise for a group of content-area teachers or cross-curricular teacher groups. While doing so, you might consider these questions:

- What instruction is needed to best prepare my students for effective reading, writing, vocabulary development—and learning—in my content area?
- How will this help students be well prepared for the OGT?

### Important Content Vocabulary from OGT Examples

Keeping a personal vocabulary notebook can be an effective way to help students understand, remember, review, and be able to use specific content vocabulary. In this notebook, students would enter new terms, symbols, and notes about visuals—including definitions and explanations in their own words. It is extremely helpful for many students to include their own drawings in their notebooks to help explain the meaning of terms and illustrative presentations found in their reading, discussions, videos, websites, and other resources.

For each of the content areas below (science, mathematics, and social studies), notice the highlighted terms and visuals, and consider possible strategies for helping your students to learn the meaning and use of important content-specific terms such as these. Many additional content-specific vocabulary terms, symbols, and visuals can be found in other released OGT items, as well as in your Ohio Academic Content Standards.

### Science Vocabulary in Released OGT Questions

- Most geologists accept radiometric dating techniques as valid because
  - **A. radioactive elements** decay at a constant and measurable rate.
  - **B. all radioactive elements used for dating purposes have the same decay rate.**
C. elements used for radiometric dating have both radioactive and non-radioactive isotopes.

Item 13, March 2008 Science OGT, Ohio Department of Education

- Energy produced by cellular processes is stored as
  A. CO₂.
  B. ATP.
  C. DNA.
  D. RNA.

Item 5, March 2008 Science OGT, Ohio Department of Education

- A student takes a herbicide-resistant weed from plot 3 and a herbicide-resistant weed from plot 4. He determines that both plants have dominant mutations in the gene that is responsible for herbicide resistance (H). The genotype of each plant is indicated below.

  Weed from plot 3: Hh
  Weed from plot 4: HH

In a cross between these two weeds, what percentage of the offspring would be resistant to the herbicide?

A. 0%
B. 25%
C. 50%
D. 100%

Item 9, March 2008 Science OGT, Ohio Department of Education

- In the diagram below, similar types of waves with the same amplitude travel in the same medium.

Compared to wave X, which statement is correct?

A. Wave Y has greater speed.
B. Wave Y has less energy
C. Wave Y has a lower frequency.
D. Wave Y has a shorter wavelength.

Item 14, March 2008 Science OGT, Ohio Department of Education

- Which element does the shell model represent?

A. Carbon
B. Fluorine
C. Magnesium
D. Sodium

Item 31, March 2008 Science OGT, Ohio Department of Education

- Environmental monitoring of a lake located to the southeast of a factory has shown a consistent decrease in pH over the period of a year. A researcher investigating the pH change hypothesizes that either a factory or a farm along the river is responsible for the pH change. The river flows into the lake.
The researcher collects a water sample from locations Y and Z in the diagram and runs pH analyses on each sample. He finds that the pH in sample Z is lower than the pH in sample Y and concludes that the factory is responsible for the low pH values in the lake.

Based on the diagram and the researcher’s investigation, provide two reasons why this may not be a valid conclusion. Describe how each reason could invalidate the conclusion.

Item 35, March 2008 Science OGT, Ohio Department of Education

Mathematics Vocabulary in Released OGT Questions

• Weekly salaries of the employees at a local video store are shown in the table below.

<table>
<thead>
<tr>
<th>Weekly Salaries of Video Store</th>
<th>Weekly Salaries</th>
<th>Number of Employees at this Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,000</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>$500</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>$350</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>$120</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>$80</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

What is the mean weekly salary at this video store?
A. $230.4
B. $242.00
C. $322.6
D. $350.00

Item 15, March 2008 Mathematics OGT, Ohio Department of Education

• The graph shows the percent of the total votes cast for each of the four candidates in Andersonville’s city council election.

If 2,542 people voted in this election, about how many votes did Lango receive?
A. 76
B. 141
C. 458
D. 915

Item 18, March 2008 Mathematics OGT, Ohio Department of Education

• Joel plays tic-tac-toe on his computer. The computer plays first and randomly places an “X” in one of the grid squares as labeled in the diagram.

The frequency table shows the computer’s first move for 50 games.

<table>
<thead>
<tr>
<th>Location on Grid</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Games</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>2</td>
<td>8</td>
<td>3</td>
<td>6</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

Based on these results, what is the experimental probability that the computer will place an “X” in a corner square on the first move of its next game?
A. \( \frac{4}{9} \)
B. \( \frac{19}{59} \)
C. \( \frac{9}{25} \)
D. \( \frac{13}{25} \)

Item 35, March 2008 Mathematics OGT, Ohio Department of Education
Social Studies Vocabulary in Released OGT Questions

- Some countries that are dictatorships hold elections from time to time. These elections are different from elections in presidential democracies because typically elections in dictatorships

A. only allow citizens to vote and to run for elected office.
B. are monitored by international observers to ensure fairness.
C. only have candidates from one political party on the ballot.
D. are held more often than elections in presidential democracies.

Item 31, March 2008 Social Studies OGT, Ohio Department of Education

- In order to stimulate the economy, the United States government lowers personal income tax rates. Why would this action be expected to promote economic growth?

A. Businesses would be required to hire more employees.
B. Manufacturers would have to pay more for raw materials.
C. The government would be less likely to engage in deficit spending.
D. Consumers would have more money available to spend on goods and services.

Item 41, March 2008 Social Studies OGT, Ohio Department of Education

- Use the following maps to answer question 28.

Following World War I, Great Britain was given a mandate (order) by the League of Nations to govern Palestine. Jewish immigration to Palestine greatly increased during the 1930s and 1940s. Violence erupted between Palestinian Arabs and Jewish people. Unable to resolve the conflict, Britain turned the problem over to the United Nations. The maps on the previous page show changes to this region as a result of the U.N. Partition Plan of 1947.

According to the maps, how did the U.N. Partition Plan propose to prevent further violence between Palestinian Arabs and Jewish people?

A. The physical features of the region were used to separate the Jewish people from the Palestinian Arabs.
B. An economic union was created that made the Jewish people and the Palestinian Arabs dependent on each other.
C. Two political regions were created in order to divide the control of Palestine between the Jewish people and the Palestinian Arabs.
D. Palestine was placed under the jurisdiction of the United Nations, and its boundaries were redrawn to include Jewish people and Palestinian Arabs.

Item 28, March 2005 Social Studies OGT, Ohio Department of Education

- Use the following picture to answer question 35:

Actions such as those shown in the picture above helped bring about

A. the decision in Plessy v. Ferguson.
B. the decision in Brown v. Board of Education.
C. the 19th Amendment.
D. the 26th Amendment.

Item 35, March 2005 Social Studies OGT, Ohio Department of Education
**Commonly Used Testing Verbs**

Along with the content-specific vocabulary and language noted in the OGT sample items, we can glean general “testing verbs” from released OGTs and from our Ohio Academic Content Standards. It would be beneficial for students to recognize the expectation expressed in each verb. For example, if the test item says to “describe . . .,” the student is expected to tell what is observable, what something or a situation looks like, such as measurements, colors, shapes, actions, etc. If the item asks students to “explain . . .,” they would be expected to tell why or how something happens or why it looks like it does. Following is an Ohio standards-based sample list of testing verbs with which students should be familiar and which students have likely encountered in assessments prior to taking the OGT:

<table>
<thead>
<tr>
<th>Analyze</th>
<th>Differentiate/distinguish</th>
<th>Predict</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrange</td>
<td>Discuss</td>
<td>Present</td>
</tr>
<tr>
<td>Categorize</td>
<td>Draw conclusions</td>
<td>Prove</td>
</tr>
<tr>
<td>Choose</td>
<td>Draw/illustrate</td>
<td>Provide</td>
</tr>
<tr>
<td>Cite</td>
<td>Enumerate</td>
<td>Record</td>
</tr>
<tr>
<td>Classify</td>
<td>Examine</td>
<td>Recognize</td>
</tr>
<tr>
<td>Complete</td>
<td>Evaluate</td>
<td>Relate</td>
</tr>
<tr>
<td>Communicate</td>
<td>Explain</td>
<td>Research</td>
</tr>
<tr>
<td>Compare</td>
<td>Explore</td>
<td>Revise</td>
</tr>
<tr>
<td>Comprehend</td>
<td>Identify</td>
<td>Select</td>
</tr>
<tr>
<td>Compute/calculate</td>
<td>Illustrate</td>
<td>Show how/what</td>
</tr>
<tr>
<td>Conclude</td>
<td>Interpret</td>
<td>Solve</td>
</tr>
<tr>
<td>Construct</td>
<td>Investigate</td>
<td>Summarize</td>
</tr>
<tr>
<td>Correct</td>
<td>Justify</td>
<td>Support (based on evidence)</td>
</tr>
<tr>
<td>Create</td>
<td>List</td>
<td>Trace (e.g., a story line, a weather pattern, a series of events)</td>
</tr>
<tr>
<td>Decide</td>
<td>Name/identify</td>
<td>Validate</td>
</tr>
<tr>
<td>Define</td>
<td>Observe</td>
<td>Verify</td>
</tr>
<tr>
<td>Demonstrate</td>
<td>Order/organize</td>
<td></td>
</tr>
<tr>
<td>Derive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Various Instructional Strategies for Building Vocabulary Through Reading in the Content Areas**

These strategies have proved helpful and can be easily adapted to suit your content and your students’ needs.

**Introducing a Topic**
Read a short topic-related piece (one or two paragraphs) from an outside source (e.g., website, newspaper, magazine, cartoon). Discuss, as a class and/or in small groups, the important vocabulary or “language” in the piece, as well as the meaning and possible connections to students’ previous learning.

**Prereading Required Text Material**
When giving a reading assignment to students, provide them with key questions to help them focus on the important content as they read the new material.
**Example**

What is the major idea in the reading? What prior knowledge do you think this connects to? Compare this with _______ that we learned about recently. What vocabulary, symbols, and/or illustrations are not quite clear to you? Identify three important points in the reading.

**Using an Anticipation Guide**

An anticipation guide provides students with some specific statements to consider as they read and try to understand content material. A guide such as this helps individual readers dig into the meaning and be thoughtful and reflective as they read.

**Example**

Below are some statements about algebra from your course textbook. Read each statement, and put a check mark next to the ones you believe to be true and an X next to the ones with which you disagree. When we discuss the reading and these statements, be ready to explain why you chose to mark each one as you did.

_____ The cumulative property of multiplication can be shown by \( z = (b)(t)(y) \) or \( z = (t)(y)(b) \).

_____ An algebraic equation can be used for computing annual interest on a $5000 car loan at a rate of 6%.

_____ Algebra is an important educational component for careers in pharmacy, logistics, and oceanography.

_____ Necessary skills for learning algebra include knowing your addition and multiplication facts, being able to read and write effectively, and remembering the order of operations when solving equations.

**Previewing, Pronouncing, and Using Important Vocabulary Before Reading the Assignment**

We all understand and learn new information best when we understand the language being used. If some of the vocabulary in our reading resources is unfamiliar to us, we need some instruction and time to absorb the meaning of these before we can understand the topic. We can help our students with this important step in learning by previewing new vocabulary terms, as well as pronouncing and using these terms in brief context-relevant discussions prior to students’ reading newly assigned text.

**Example**

Paragraph from a chemistry reading assignment:

When you light a burner on your stove, methane gas bursts into flame and produces the thermal energy necessary to heat your food. The burning of methane is a chemical reaction. Burning something typically requires oxygen, so methane and oxygen are the reactants. The products are carbon dioxide and water. The *word expression* for this reaction is this:

Methane + oxygen *produces* carbon dioxide + water

The *chemical equation* for the same reaction is this:

\[ \text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O} \]

In previewing the reading assignment, identify, pronounce, and discuss with the class *methane gas*, *thermal energy*, *chemical reaction*, *reactants*, *products*, *word expression*, *chemical equation*, \( \text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O} \).

**Read-Alouds/Think-Alouds**

A teacher or student leader does a read-aloud/think-aloud with the class by selecting several key paragraphs from the required reading and then thinking out loud as he or she reads the passage aloud, having the students follow along in their books (or handouts, or website). This helps all students think of questions, background knowledge, new vocabulary, and new ideas—and think either out loud or silently as they read on their own.

**Example**

Using the chemistry example paragraph above for a read-aloud, the teacher or student leader might read and think out loud something like this:

When you light a burner on your stove ("Hmmm, this can’t be an electric stove!")

methane gas bursts into flame and produces the thermal energy ("What’s the difference between thermal energy and heat?") necessary to heat your food.
The burning of methane is a chemical reaction ("chemical reaction . . . so I wonder what methane becomes?").

Burning something typically requires oxygen, so methane and oxygen are the reactants. The products are water and carbon dioxide. ("Can I SEE the water and carbon dioxide?")

The word expression for this reaction is this: methane + oxygen produces carbon dioxide + water

The chemical equation for the same reaction is this: CH₄ + 2O₂ → CO₂ + 2H₂O ("I see chemical formulas AND numbers in this equation!")

Visual Representation Analysis

Visual representations can be presented in many ways. A few examples include the Lewis dot or Bohr representation of atomic structure; whisker, line, bar, or pie graphs; force or velocity vector diagrams; topographic, weather, political, or road maps; design and scale drawings for devices or objects such as buildings, bridges, cell structure, tectonic plate movement, or electrical circuits; and photographs of many different events, people, structures, natural land formations, clothing styles, etc.

Analysis of these visual representations would include asking questions such as:

What are the observable details of the visual, and what might you learn from these?
What does the visual remind you of, or what could it be compared with?
What are the meanings of the labels on the visual (such as titles, headings, explanatory terms, etc.)?
How do these labels help?
What is the source of the visual?

Summarizing Guide

Assign students a section from their textbook or other essential reading material on the concept being studied. Explain that they will be writing a summary of the passage as well as noting important vocabulary terms, symbols, and visual items that are in the reading assignment. Provide students with a summary guide to help them organize their thoughts.

Example

Summary Guide: Write five short sentences (no more than ten words each) that together provide a meaningful summary of the assigned reading section.

1._________________________________________
2._________________________________________
3._________________________________________
4._________________________________________
5._________________________________________

Vocabulary: List the words, symbols (e.g., formulas, vectors, equal =, greater than >), or titles of visuals (e.g., graphs, maps, drawings) that are especially important in this reading and/or are unfamiliar to you:
___________________; ___________________
___________________; ___________________

Graphic Organizers

Graphic organizers can be particularly valuable to students by helping them process and synthesize their thinking and learning. These organizers can be designed to be used before, during, or after a student is engaged in the actual reading. Below is an example of a graphic organizer to be used during or after reading that is especially helpful in building vocabulary (broadly defined to include graphics, content-specific symbols, etc.) and supporting conceptual learning.

Example

Read the following paragraph, and then use the graphic organizer below to organize the information you just read:

Ionic compounds are made up of atoms held together electrostatically. That is, the atoms form ions easily, giving them either a negative or positive electric charge. Opposite charges attract, so a negative ion would be attracted to and held together with a positive ion. Many types of salts are ionic substances and are usually solids at room temperature. Table salt, NaCl, is a familiar ionic substance. However, most molecular compounds have very different properties. Hydrogen chloride (HCl), for example, is a gas at room temperature. Water (H₂O) is a liquid at room temperature. These two molecular compounds are so different from salts (ionic substances) that you might
correctly suspect that electrostatic attraction between ions fails to explain their bonding. These compounds (HCl and H₂O) are not ionic. Combining atoms in HCl, for example, do not give up electrons. Instead, H and Cl atoms share electrons, and this sharing holds them together to form a molecule. This is called covalent molecular bonding. For water, the two H atoms share electrons with the oxygen atom, holding them together to form the covalently bonded water molecule, H₂O.

Sample organizer filled in by student:

**ORC Resources**

These resources from the ORC collection are especially useful in building vocabulary in the content areas.*

**Choosing, Chatting, and Collecting: Vocabulary Self-Collection Strategy**
[http://www.ohiolic.org/record/3804.aspx](http://www.ohiolic.org/record/3804.aspx)

In the vocabulary self-collection strategy, students choose the words they want to learn, offer a rationale for their selection, and agree upon words to include in a classroom collection. This strategy helps students to understand the meanings of new words, integrate new words in their conversations and writing, and make personal connections with words while reading. In this lesson, an online Shakespeare text is used as an example. The self-collection strategy is versatile and may be applied to any content-area reading. This lesson can easily be modified and used with other content-area topics as well. Although self-selection of vocabulary enhances students’ motivation and achievement in learning new words, overuse of the strategy will diminish active engagement.

**ABC Bookmaking Builds Vocabulary in the Content Areas**
[http://www.ohiolic.org/record/3799.aspx](http://www.ohiolic.org/record/3799.aspx)

This lesson engages and motivates students in building content-area vocabulary through the creation of ABC books. Students select vocabulary words and terms related to a current unit of study in mathematics, science, social studies, or other subjects. They research the meanings of the words and create a reference page for each word within their books. Additionally, illustrations and examples accompany each word to demonstrate full understanding of its meaning. At the end of the lesson, students share their ABC books by presenting them to the class. The collection of books becomes a reference resource for classroom inquiry. This lesson may be adapted to incorporate the study of word origins, roots, and affixes. Detailed plans for implementing this lesson, along with student activity sheets and guidelines, are available at the website.

**SAT Vocabulary for Dummies: Using New Words in Context**
[http://www.ohiolic.org/record/5949.aspx](http://www.ohiolic.org/record/5949.aspx)

This content resource is a quick one-page resource on vocabulary intended for teachers to use when focusing on SAT vocabulary comprehension. The page includes a funny story for students to laugh along with, a brief review of the vocabulary highlighted in the story, the dictionary definitions for the terms, and a quick exercise (with answers) to check students’ vocabulary comprehension. Links include additional quick and fun resources for SAT vocabulary study.

**The Lex Files**
[http://www.ohiolic.org/record/3304.aspx](http://www.ohiolic.org/record/3304.aspx)

The Lex Files provide access to Latin-Greek prefixes, suffixes, and root words. Lists of quotations, legal terms, medical words, prescription terms, religious expressions, and various abbreviations from Latin and Greek classical and modern translations are also available at the website. These reference materials support vocabulary learning and may be used for instructional planning or student-led projects.
Word Central
http://www.ohiorc.org/record/4776.aspx
Maintained by Merriam-Webster, this student-centered website offers free access to an online dictionary, word games, and interactive word puzzles. Features on the site include a free subscription to the “Daily Buzzword” and “Build-Your-Own-Dictionary.”

References and Bibliography


National Council for the Social Studies (NCSS), www.socialstudies.org/resources.


Ohio Department of Education. (2002). English language arts academic content standards.

Ohio Department of Education. (2002). Mathematics academic content standards.


Ohio Department of Education. (2003). Social studies academic content standards.


*Note: The links for each resource take you to the ORC page that displays a brief commentary describing the resource and lists Ohio and national academic content standards. You can click the URL at the top of the commentary to go directly to the resource. To find out more about ORC’s records, go to Frequently Asked Questions. http://www.ohiorc.org/about/faq/

Recently retired, Dr. Carol Damian has over 30 years experience as a physics and chemistry teacher and in K–12 science materials research, curriculum and assessment development, and teacher professional development. Carol serves as the Ohio Mathematics and Science Coalition Executive Board Chair and is actively involved in the Ohio ASCD Board and the ORC Science Content Board, as well as Ohio’s STEM initiatives. She has also served on the Advisory and Writing Committees for the Ohio Science Academic Content Standards, Content Committees for Ohio Science Graduation Test, and fifth grade Ohio Science Achievement Test and is a past president of the Science Education Council of Ohio.
For Your Bookshelf

Books by Harmon, Wood, & Hedrick and Allen

by Beth Munger


This practical book is a compilation of forty-two research-based strategies to help middle and high school content-area teachers with vocabulary instruction in the classroom. David W. Moore (Arizona State University) describes in the foreword what separates this book from so many other books on vocabulary instruction: “. . . its accessible, no-frills format. The vocabulary strategies’ descriptions, suggested variations, content area examples, and blackline masters are especially convenient.” Each vocabulary instruction strategy is self-contained and includes a brief introduction to the strategy (including the research that supports it), a materials needed list, a reference to the content area for which the strategy is most helpful, the procedure for teaching the strategy, and content-area examples and variations of the strategy.

Authors Janis M. Harmon, Karen D. Wood, and Wanda B. Hedrick have divided the chapters by content area to help teachers “focus on the type of word learning tasks that are involved in the terms” they have selected to teach. In addition, the authors reference the specific vocabulary instruction needs of students who struggle with reading, students who lag behind in reading proficiency, and English language learners.


With an ability to invite teachers into casual conversation and the knack for knowing just what teachers and students need to advance their learning, Janet Allen is one of those authors whose every book you want to seek out for your teacher bookshelf. Allen seems to talk out loud in a way that reaches into the heart of teacher methodology, grasping onto just the right collection of ideas and activities for what’s going to work in the middle and high school classroom.

In Inside Words: Tools for Teaching Academic Vocabulary, the author thinks out loud—”Why another book on teaching vocabulary? I have pondered that question several times in the course of writing this book”—she then reminds us that “one must be drenched in words, literally soaked in them, to have the right ones form themselves into the proper pattern at the right moment’ (Hart Crane).” Here teachers can thumb through an extensive list of instructional strategies and the tools that support them (building background knowledge, teaching words that are critical to comprehension, providing support during reading and writing, and developing conceptual frameworks for themes, topics, and units of study), selecting from among them vocabulary learning activities that fit their objective and classroom. Two special features include a CD of printable graphic organizers and an appendix of reproducibles in both English and Spanish.

[This review originally appeared in the March 2008 issue of In Perspective.]
Beth Munger teaches composition, reading, and American literature at Ohio Dominican University. She has also taught composition and literature at Ohio State University and Columbus State Community College. Munger holds a bachelor of arts degree from Ohio Wesleyan University, where she majored in English and history, and a master of arts degree from Ohio State University in the field of rhetoric and composition. She has worked on several ORC projects, including Advancing Literacy Instruction Together (AdLIT), Ohio Writing Institute Network for Success (OhioWINS), and the English Language Arts Program Models.

From the ORC Collection

More Resources for Vocabulary for Content-Area Learning

These resources from the ORC collection support this month’s theme, Vocabulary for Content-Area Learning. To make it easier to find just what you want, the resources have been divided into two categories: instructional resources and professional reading.

Instructional Resources/Lessons and Content Resources

Literacy Strategies: Knowledge Rating
RESOURCE TYPE: Content Resource
DISCIPLINE: English Language Arts
STANDARDS ALIGNMENT: Grades 5 - 8
PROFESSIONAL COMMENTARY: Knowledge Rating is a pre-, during, and post-reading activity in which students analyze vocabulary words from the text before reading. Developed by an instructional design team at Southeastern Louisiana University as part of a content area reading project, this strategy can be used in a variety of contexts.
CAREER FIELDS: General Career Skills
PROJECTS: AdLIT, Standards First
FULL ORC# 28

Using a Word Journal to Create a Personal Dictionary
RESOURCE INFORMATION
RESOURCE TYPE: Instructional Resource -- Promising Practice
DISCIPLINE: English Language Arts
STANDARDS ALIGNMENT: Grades 6 - 8
PROFESSIONAL COMMENTARY: Learning new vocabulary words is important for all readers. This lesson enables students to track unfamiliar words as they read fictional or informational texts.
CAREER FIELDS: General Career Skills
PROJECTS: AdLIT, Standards First
FULL ORC# 1396
Vocabulary: The Key to Improving Comprehension
RESOURCES TYPE: Instructional Resource -- Promising Practice
DISCIPLINE: English Language Arts
STANDARDS ALIGNMENT: Grades 1 - 8
PROFESSIONAL COMMENTARY: This resource describes two activities for helping students to learn unfamiliar words so they can comprehend texts more fully. The mini-lessons, designed for primary and intermediate classrooms, encourage students to make connections between what they know about words and what they need to know in order to understand texts better.
CAREER FIELDS: General Career Skills
PROJECTS: AdLIT, Standards First
FULL ORC# 148

ABC Bookmaking Builds Vocabulary in the Content Areas
http://www.readwritethink.org/lessons/lesson_view.asp?id=276
RESOURCES TYPE: Instructional Resource -- Promising Practice
DISCIPLINE: English Language Arts
STANDARDS ALIGNMENT: Grades 4 - 10
PROFESSIONAL COMMENTARY: This lesson engages and motivates students in building content area vocabulary through the creation of ABC books. Students select vocabulary words and terms related to a current unit of study in mathematics, science, social studies or other subjects.
PROJECTS: AdLIT
FULL ORC# 3799

The Lex Files
http://www.lexfiles.info/
RESOURCES TYPE: Content Resource
DISCIPLINE: English Language Arts
STANDARDS ALIGNMENT: Grades 6 - 12
PROFESSIONAL COMMENTARY: The Lex Files provide access to Latin-Greek prefixes, suffixes, and root words. Lists of quotations, legal terms, medical words, prescription terms, religious expressions, and various abbreviations from Latin and Greek classical and modern translations are also available at the web site.
PROJECTS: AdLIT
FULL ORC# 3304

Professional Reading
A Focus on Vocabulary
http://www.prel.org/products/re_/ES0419.htm
RESOURCES TYPE: Professional Resource
DISCIPLINE: English Language Arts
STANDARDS ALIGNMENT: Grades 3 - 9
PROFESSIONAL COMMENTARY: Of the many compelling reasons for providing students with instruction to build vocabulary, none is more important than the contribution of vocabulary knowledge to reading comprehension. The focus of this professional resource is on vocabulary instruction as a component of reading comprehension.
CAREER FIELDS: General Career Skills
PROJECTS: AdLIT, Standards First
FULL ORC# 4778

Promoting Vocabulary Development: Components of Effective Vocabulary Instruction
http://www.tea.state.tx.us/reading/practices/redbk5.pdf
RESOURCES TYPE: Professional Resource
DISCIPLINE: English Language Arts
STANDARDS ALIGNMENT: Grades 3 - 8
PROFESSIONAL COMMENTARY: This professional resource is a 37-page pdf file, reproducible per the acknowledgment in the introduction. Its team of authors (Texas Education Agency) has included not only current research and inquiry in vocabulary development, but also in-depth teaching materials and explicit instruction strategies for vocabulary instruction.
PROJECTS: AdLIT
FULL ORC# 6667

Adolescent Literacy In Perspective, June 2005, Vocabulary and Word Study For Adolescent Learners
RESOURCES TYPE: Professional Resource
DISCIPLINE: English Language Arts
STANDARDS ALIGNMENT: Grade 6 - Postsecondary
PROFESSIONAL COMMENTARY: The June 2005 issue of Adolescent Literacy In Perspective, which focuses on vocabulary and word study.
PROJECTS: AdLIT, OhioWINS
FULL ORC# 10278
Vocabulary, Visualization, and Implications—Improving Student Achievement on Geometric Test Items (Webcast Article)
http://ohiorc.org/for/math/ogt/article.aspx?articleId=15

RESOURCE TYPE: Professional Resource
DISCIPLINE: Mathematics
STANDARDS ALIGNMENT: Grade 8 - Postsecondary

PROFESSIONAL COMMENTARY: This article was written as background information for viewers of the first in a series of three webcasts discussing issues related to the mathematics portion of the Ohio Graduation Test (OGT). The first webcast, aired April 29, 2008, focused on analysis of student responses to geometry items on the OGT.

FULL ORC# 11588

ORC Records

In case you are not familiar with ORC’s records, here is a very brief explanation of the resource commentaries and other resource information found in the records.

Each commentary is part of a larger record created by the Ohio Resource Center. The commentaries describe high-quality Internet-based resources in the areas of mathematics, science, and reading. In addition to the commentaries, the records specify grade levels appropriate to the resources and align the resources to the relevant Ohio standards, benchmarks, and indicators (providing an excellent way to help teachers implement the Ohio standards in their classrooms) plus much more. Each resource can be accessed directly from the record.

To find out more about ORC resources and records, go to ORC’s Frequently Asked Questions page.
http://www.ohiorc.org/about/faq/
Each issue of *Adolescent Literacy In Perspective* highlights a topic in adolescent literacy. Here you can read teacher-written articles, see what experts in the field are saying, gain insight from students, and find resources for classroom use.

**What Is AdLIT?**
Advancing Adolescent Literacy Instruction Together (AdLIT) is designed to address the unique literacy needs of adolescent learners by promoting and supporting effective, evidence-based practices for classroom instruction and professional development activities in Ohio’s middle and secondary schools.

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**About the Ohio Resource Center for Mathematics, Science, and Reading**
The Ohio Resource Center works to improve teaching and learning among Ohio teachers by promoting standards-based, best practices in mathematics, science, and reading for Ohio schools and universities. The Center’s resources are available primarily via the web and are coordinated with other state and regional efforts to improve student achievement and teacher effectiveness in K-12 mathematics, science, and reading. To learn more about ORC, visit the website at [www.ohiorc.org](http://www.ohiorc.org).

The Ohio Resource Center is a project of the State University Education Deans, funded by the Ohio General Assembly, and established by the Ohio Board of Regents. ORC is located on the campus of the Ohio State University and is affiliated with OSU’s College of Education and Human Ecology.

**Ohio Department of Education**
The Office of Literacy is part of the Ohio Department of Education. The ultimate goal of the Office of Literacy is to help all students become proficient readers. The initiatives from this office communicate research-based practices and attempt to build an awareness and understanding for a richer, broader view of adolescent literacy in schools and communities. The office engages in statewide collaborations with other institutions and agencies. AdLIT is one of many collaborations that bring together a variety of constituents and stakeholders in promoting adolescent literacy. For more information, see [http://www.ode.state.oh.us/GD/Templates/Pages/ODE/ODEDetail.aspx?page=3&amp;TopicRelationID=890&amp;Content=10467](http://www.ode.state.oh.us/GD/Templates/Pages/ODE/ODEDetail.aspx?page=3&amp;TopicRelationID=890&amp;Content=10467).

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