

A young woman with long dark hair is reading a book. She is wearing a grey cardigan over a light-colored top. The background shows a road stretching into the distance under a cloudy sky, with green hills on either side.

Remove Limits to Learning with
Systematic
Vocabulary Instruction

"If you have a limited vocabulary, you will also have a limited vision and a limited future."

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by

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&

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— Jim Rohn,
business person,
author, & motivational
speaker

Why focus on systematic vocabulary instruction?

If you have ever spent an afternoon studying state assessment results only to shake your head over language arts scores that were well below the average, you likely wondered what it was that the entire school was missing. Not knowing what to do next, you might even have remarked, “What we really need is some research on how to address the persistent gaps among subgroups that we see here in our data.” You would have been absolutely right.

The good news is that there is research that not only addresses the achievement gaps between the various subgroups, but also points to systematic vocabulary instruction as a way to narrow the gap for students who are economically disadvantaged, second language learners, and those with learning disabilities (Dickenson & Tabors, 2001; Moats, 2001; Storch & Whitehurst, 2002; Marzano, 2003; Paynter, Bodrova, & Doty, 2005). Researcher Robert Marzano conducted a meta-analysis of 35 years of research on influences affecting student achievement, organizing them into three broad categories and eleven related factors. Marzano noted that much of the variance in student achievement was attributable to student-level factors such as home environment, background knowledge, and student motivation (see Figure 1). Vocabulary is a pivotal component of a student’s background knowledge, and the research indicates that vocabulary instruction can be an effective means for increasing it.

Figure 1

Research-Based Influences on Student Achievement

School-Level

- Guaranteed and Viable Curriculum
- Challenging Goals and Effective Feedback
- Parental and Community Involvement
- Safe and Orderly Environment
- Collegiality and Professionalism

Teacher-level

- Instructional Strategies
- Classroom Management
- Curriculum Design

Student-Level

- Home Environment
- ★ - Learned Intelligence and Background Knowledge
- Motivation

Adapted from *What Works in Schools: Translating Research into Action*, by R. J. Marzano, p. 10. Copyright 2003 by the Association for Supervision and Curriculum Development.

Throughout this booklet, we describe the positive outcomes that result when a school- or district-wide vocabulary program is strategically developed and intentionally implemented. The following information and resources will set the stage for you to create and implement a systematic approach to vocabulary instruction and can serve as further impetus for learning more about how vocabulary instruction becomes an essential part of classroom instruction. The booklet includes three sections:

- Section One is a brief overview of research on vocabulary development, including a rationale for helping students develop a rich working vocabulary.
- Section Two details four research-based principles for vocabulary development.
- Section Three provides strategies for translating research on vocabulary instruction into classroom practice.

Section One

SECTION ONE:

What we know from research about vocabulary instruction

Most of us define vocabulary simply as the stock of words that students know and use. But as researchers Reutzel & Cooper (2003) note, students' vocabulary actually comprises the four dimensions of listening, speaking, reading, and writing.

Listening vocabulary is made up of all the words students hear and understand but do not necessarily use in their own speech. **Speaking** vocabulary includes all the words students hear and use in everyday speech. Students need to first acquire a word at the listening and speaking levels before they are able to read and understand it. They also need to talk about what they are learning in order to develop confidence in using words to express themselves. **Reading** vocabulary is a subset of students' listening and speaking vocabularies and consists of the words in print that students can read and understand. **Writing** vocabulary includes words that students can understand when listening, speaking, and reading, and can be reproduced when writing.

The teacher's role is to uncover which words students already "own" as a part of their listening and speaking vocabulary and teach the unknown words that are critical to the content being learned.

Vocabulary's impact on lifelong learning and earning

Recall the delight of reading aloud with a young child Dr. Seuss' *One Fish Two Fish Red Fish Blue Fish*, the fun of pronouncing the unfamiliar words of Lewis Carroll's "Jabberwocky" with an older child, or the excitement of sharing the opening chapter of *Harry Potter and the Philosopher's Stone* with a middle schooler. One of the reasons these moments are memorable is because the words themselves are the foundation of learning that will follow.

Beck, McKeown, & Kucan (2002) estimate that better readers may learn as many as seven new words a day, while struggling readers and low achievers learn one or two new words per day. Not surprisingly, students with rich vocabularies find more enjoyment in reading and are more willing to spend time reading. Conversely, students who do not know the meanings of a sufficient proportion of the words in a text struggle with comprehension. As students fall behind in their understanding of the words they encounter, gathering and understanding information becomes tedious and difficult, and students are even less likely to increase their understanding of facts and concepts.

The language problems of students who enter school with poor or limited vocabularies only worsen over time. Without intervention, low vocabulary knowledge at the end of kindergarten typically translates into low vocabulary knowledge throughout schooling. Vocabulary knowledge also is closely related to earning potential. Students' lack of everyday and academic vocabulary ultimately translates into shallow interaction with print and the spoken word, fewer job opportunities, and less income. Viewed this way, there is no doubt that systematic vocabulary instruction must be prominent in classroom instruction.

How to *know* a word

Knowing a word involves a skill that proficient readers take for granted—the ability to recognize the word, both through how it sounds and what it looks like. Typically, knowing a word also means knowing its definition. But knowing a word's definition is not the same thing as being able to use the word in speech and writing or to understand the text in which the word appears. Dale and O'Rourke (1986) identify four levels of word knowledge:

1. I never saw it [the word] before.
2. I've heard of it [the word], but I don't know what it [the word] means.
3. I recognize it [the word] in context—it [the word] has something to do with...
4. I know it [the word].

Nagy and Scott (2000) describe the process of knowing a word as happening over time as students come in contact with the word in various contexts. The more exposures students have with a word, the more sophisticated their understanding. Sophisticated understanding translates into deeper conceptual understanding, a broader knowledge base related to the multiple meanings a word can convey based upon context, and an enhanced ability to make connections to the subtleties of language found in riddles, poetry, colloquial speech, and puns (Johnson, Johnson, & Schlicting, 2004). The goal of vocabulary learning is to have students store the meanings of words in their long-term memory and to use these words to construct meaning, comprehend text, and understand content they are studying.

Vocabulary development and standards-based education

Students must develop a broad-based academic vocabulary in order to meet the rigorous requirements set forth in state standards, statements of what students should know, understand, and be able to do in order to be proficient in the areas of speaking, listening, reading, and writing. To manipulate language in these areas, students need to be able to access different strategies that will deepen their understanding of the content. Strategies associated with learning and using words and concepts fall into two categories: declarative, or explicit, and procedural, or implicit, knowledge (Dispenza, 2007). Declarative knowledge broadly encompasses vocabulary terms and phrases, details, and organizing ideas. Vocabulary, in the general sense, is the foundational underpinning of the development of declarative knowledge. Procedural knowledge relates to skills, tactics, and processes (Marzano, Pickering, & Pollock, 2001).

Systematic vocabulary instruction requires students to use both declarative and procedural knowledge. Furthermore, research demonstrates that students learn more words when they receive a set of strategies and steps for learning words and their meanings. Teachers should not only select and prepare lists of terms and phrases that students will encounter as they learn new content, but they also should teach students strategies to make connections between new vocabulary and students' background knowledge. The word lists and strategies for learning vocabulary are examples of declarative knowledge, while employing such strategies represents procedural knowledge. Teachers should plan time for massed and distributed student practice with the new words, so students have opportunities to use the strategies and steps they are learning.

How many words are enough?

Debate continues over exactly what words and how many are essential for students to learn, but most experts agree that without instructional intervention, the vocabulary gap between more and less skillful readers will widen over time. Nagy and Anderson (1984) suggest that the average child learns about 3,000 new words each year. An average middle socio-economic first grader knows 50 percent more words than an average low socio-economic first grader. If a low socio-economic first grade student came to school with a vocabulary of 2,500 words, he or she would need to learn **25 new words a day** just to catch up to where the average socio-economic student began.

It's important to keep in mind, though, that when there is intentional instruction to aid vocabulary development, children show substantial gains in both vocabulary and comprehension (Beck, Perfetti, & McKeown, 1982; McKeown, Beck, Omanson, & Pople, 1985). Although a typical academic year of 36–38 weeks is not enough instructional time to directly teach 3,000 new words a year, Chall (1996) suggests that 300–500 words can be reasonably taught through direct instruction at a rate of 8–10 words per week.

Planned incidental learning of vocabulary, when used in tandem with wide reading, also can increase students' vocabulary knowledge. Nagy, Herman, & Anderson (1985) explain how much of the annual growth in vocabulary can come from planned incidental learning:

- We assume that a fifth grader reads for an hour per day at the rate of 150 words per minute, 5 days per week, and will encounter 2,250,000 words in the course of all this reading.
- If 2 percent to 5 percent of the words encountered are unfamiliar, the child will have come across from 45,000 to 112,500 unknown words.
- From other research, we know that children will learn between 5 percent and 10 percent of previously unknown words from a single reading (Nagy & Herman, 1987).
- This would account for at least 2,250 new words learned from context each year.

In addition, the need for students to continue reading a wide variety of materials over the non-school months is paramount.

SECTION TWO: Four research-based principles to guide effective vocabulary instruction

The primary resource for this section is “Classroom Instruction that Works: Research-Based Strategies for Increasing Student Achievement” by Marzano, Pickering, & Pollock (2001).

Vocabulary instruction, although not overlooked in classrooms across the nation, often falls short of providing students with the skills to develop a comprehensive understanding of the words they encounter. The meta-analytic study of research reported in *Classroom Instruction that Works* provides a rationale and foundational information for establishing a systematic approach to vocabulary instruction. The authors suggest the following principles to guide the development and implementation of a school- or district-wide vocabulary program.

Research-based Principle #1

Students must encounter words in context more than once to learn them.

- One or two exposures to words in context do not produce significant learning. A well-designed vocabulary learning program should provide sufficient opportunities for students to have at least six encounters with those words that are essential to learning new content.
- As students encounter a new word while reading, it will most likely be a single, isolated encounter. Over 90 percent of words students encounter in their reading occur less than once in a million words of text; about half occur less than once in a billion words (Nagy & Anderson, 1984). Additional studies estimate that students have anywhere from a 5 percent chance of learning a new word encountered in their reading (Nagy & Herman, 1987) to a 15 percent chance (Swanborn & de Gropper, 1999). This means that students should be exposed to vocabulary learning experiences that extend beyond wide reading, even though such programs encourage students to notice new words and try to figure out their meaning.

Figure 2

Factors Affecting the Chances That a Student Will Learn New Words While Reading

	Factor	Chances of Learning
Ability	Low	8%
	Medium	12%
	High	19%
Grade Level	Grade 4	8%
	Grade 11	33%
Text Density	1 new/10 (high)	7%
	1 new/74	14%
	1 new/150 (low)	30%

Adapted from *Classroom Instruction that Works: Research-Based Strategies for Increasing Student Achievement*, by R. J. Marzano, D. J. Pickering, & J. E. Pollock, p. 125. Copyright 2001 by Mid-continent Research for Education and Learning.

Research-based Principle #2

Instruction in new words enhances learning those words in context.

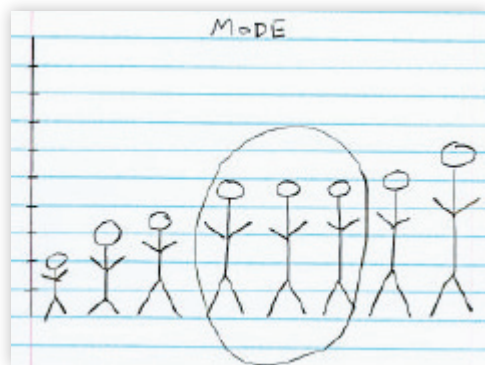
- When students receive instruction on words prior to encountering them in context, their ability to comprehend these words increases by a factor of one-third. This is true even if the prior instruction is minimal (Jenkins, Stein, & Wysocki, 1984). When minimal instruction is provided to students, they will develop a surface level understanding of the words they encounter. This minimal understanding, along with the context in which the word appears, is sufficient for students to begin to construct meaning for the information they are reading.
- Planned incidental instruction words are those words that students also need to know in order to learn and use the content, but they do not play as pivotal a role as direct instruction words. Planned incidental instruction can occur through wide reading, field trips, class discussions, partner reading and sharing, writing, and videos. Less instructional time is dedicated to planned incidental words and instruction. However, it is important to expose students to these words multiple times, and the instruction must focus on learning vocabulary in context.

Research-based Principle #3

One of the best ways to learn a new word is to associate an image with it.

- Many psychologists theorize that knowledge is stored in two forms: linguistic and nonlinguistic. The linguistic form is expressed as words, phrases, and statements while the nonlinguistic or imagery form is expressed as pictures that include physical sensations such as smell, taste, touch, kinesthetic association, and sound (Richardson, 1983).
- Students should be asked to learn a new word by creating both a linguistic and a nonlinguistic representation for that word. Using both forms will help students gain more information about the word and make more connections to their prior knowledge. Additionally, the use of linguistic and nonlinguistic representations provides students with structures to recall not only the meaning of the word, but the word itself.
- Although many vocabulary programs may incorporate the use of linguistic representation of the word (e.g., write the definition in your own words), most do not intentionally and thoroughly engage students in creating nonlinguistic representations.
- In many classrooms, students are asked to use memorization to repeat or rehearse the definition of a word. This technique tends to produce fewer gains in student achievement than when students generate their own nonlinguistic representations in the form of mental images, concrete organizers, or symbols.
- For some words, it will be easy for students to create a mental picture that includes physical sensations. For words that are more abstract in nature, students might use symbols. An example of this is depicted in Figure 3. The student has drawn eight stick figures and circled three to indicate the mode (the most frequent value of a set of data).

Figure 3



Research-based Principle #4

Directly teach students words that are critical to their understanding of new content.

- A systematic vocabulary program that a school or district establishes should incorporate direct instruction as a component of the program. Teaching vocabulary has been shown to increase students' ability to understand new content by 12 percentile points (Stahl & Fairbanks, 1986). That is, if a student is involved in a systematic vocabulary program where new words are taught each week, this student would score 12 percentile points higher on a test on new content than a student who does not have systematic vocabulary instruction.
- An effective vocabulary program clarifies the words that teachers should focus on teaching. Direct instruction words are those words that are **most important** to comprehending content. Research indicates that student achievement will increase by 33 percentile points when vocabulary instruction focuses on specific words that are important to what they are learning (Stahl & Fairbanks, 1986). Direct instruction on these words produces the most powerful learning.
- In addition to those words or phrases that are critical to the new and essential content that students are learning, direct instruction should incorporate teaching and modeling strategies and steps that will assist students in learning new vocabulary.

SECTION THREE: Strategies for translating research on vocabulary instruction into classroom practice

We know that as a teacher, on a daily basis, you face widely diverse student populations that encompass ever-increasing needs. This section of the vocabulary booklet is dedicated to translating research into understandable strategies and ideas to apply right away in your classroom.

Use a five-step method for direct vocabulary instruction.

Marzano, Pickering, & Pollock (2001) outline five steps for direct vocabulary instruction. The steps provide a means by which teachers can assist students in learning and applying a strategy that will make learning vocabulary an easier task.

Figure 4

Steps for Learning a Vocabulary Term or Phrase

- Step 1** Present students with a brief explanation or description of the new term or phrase.
- Step 2** Present students with a nonlinguistic representation of the new term or phrase.
- Step 3** Ask students to generate their own explanation or description of the term or phrase.
- Step 4** Ask students to create their own nonlinguistic representations of the term or phrase.
- Step 5** Periodically ask students to review the accuracy of their explanations and representation.

Step 1

Present students with a brief explanation or description of the new term or phrase. It's best to state the meaning of the word in student-friendly language in order to facilitate learners developing a basic understanding of the word.

Step 2

Present students with a nonlinguistic representation of the new term or phrase. Many psychologists believe that knowledge is stored as words (linguistically) and images (nonlinguistically). The more students use both systems of representation, the better they are able to think about and recall knowledge. Whenever possible, use a variety of activities to produce nonlinguistic representations, ensuring that the representations elaborate on knowledge.

Step 3

Ask students to generate their own explanation or description of the term or phrase. One way to initiate student thinking is by using sentence stems such as these:

It is kind of like _____.

It looks like _____.

It is when you _____.

It's where you go to _____.

It feels like _____.

It smells like _____.

You use it when you _____.

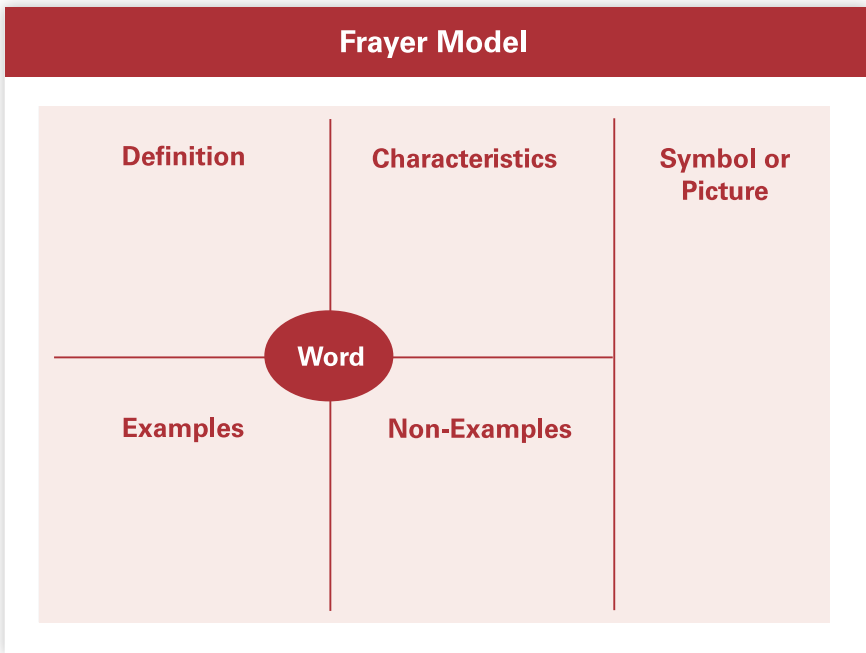
Teachers can also help students identify if a word is a person, place, thing, or event, and then ask probing questions to stimulate student thinking related to the category.

Step 4

Ask students to create their own nonlinguistic representation of the term or phrase. Some students will shy away from creating nonlinguistic representations because they believe they cannot draw, feel a need to “overdraw,” would rather copy what the teacher or other students produce, or have difficulty representing the term. It is essential that the teacher spend time modeling the use and importance of nonlinguistic representations (see Step 2).

Some examples of nonlinguistic representations include graphic organizers, mental maps and models, physical representations, and kinesthetic representations. The Frayer Model is an excellent tool to use when assisting students in using a nonlinguistic representation (see Figure 5).

Figure 5



Adapted from *A Schema for Testing the Level of Concept Mastery* (Working Paper No. 16) by D. A. Frayer, W. C. Frederick, & H. J. Klausmeier, 1969. Madison, WI: Wisconsin Research and Development Center for Cognitive Learning.

Step 5

Periodically ask students to review the accuracy of their explanations and representations. Here are a few ideas to help students keep vocabulary words in the forefront of their learning:

- Teach students that after they have learned a word they may encounter it again and this will deepen their understanding of the word.
- Model for students how to use a list of questions to review and refine their understanding of a previously learned word.
- Provide students with a set of questions they can ask themselves as they are deepening their understanding of a word, such as, *How will I refine or change my prior understanding? Will I add more detail? Will I delete any information? Does my prior understanding still hold up? Is there anything that is incorrect or inaccurate? Do I need to change how I have represented my understanding? If so, what changes will I make?*

Dedicate enough time to vocabulary instruction.

Teachers should determine an adequate amount of time to spend on vocabulary instruction based on their students and the content students are learning. It is estimated that it takes between 5 and 26 minutes to learn a word depending on prior knowledge, number of encounters, and context (Jenkins, Matlock, & Slocum, 1989).

When teaching students procedural vocabulary, students will need 20–24 practice sessions before you can be reasonably sure students grasp the new skill enough to use it effectively on their own (80% competency). The increments of learning gradually get smaller and smaller as students fine tune their knowledge and skills.

Teach the right words.

Not all words are equally important. Decide the key terms and phrases students need to know in order to understand the content they are learning. These words can be taken from state standards documents or standards documents such as the McREL Compendium. Teachers should not rely on textbooks to be the sole guiding factor when determining the vocabulary terms and phrases that students need to learn at each grade level.

When districts undertake the task of horizontally and vertically articulating the word lists that will be taught, they greatly enhance the continuum of learning for students. However, an often overlooked component of the articulation process is determining and designating which words will be taught through direct instruction and which words will be specified as planned incidental words.

Infuse vocabulary instruction into lesson plans and units of study.

Good vocabulary instruction should resemble the way students learn words everyday. To help move new vocabulary from short-term to long-term memory, teachers can create language and print rich environments. Instructional strategies that teachers can intentionally and strategically place in their lesson plans include these:

- Engage students in wide reading at the instructional and independent levels.
- Use direct instruction to teach vocabulary that is critical to learning new content.
- Play vocabulary games to engage students in learning and reviewing new words.
- Expose students to new words multiple times to learn the meaning, pronunciation, and how its meaning may change in different contexts.
- Teach and model multiple vocabulary strategies.
- Provide opportunities for students to talk about what they are learning.
- Help students develop their own strategies for learning words from written and oral contexts (context clues, structural analysis).
- Assist students in using nonlinguistic representations to represent their learning.

Use additional strategies to help students learn words.

Teachers should teach new words within the context of a content area unit, topic, or story and activate students' background knowledge. Teachers also should scaffold learning by emphasizing relationships between known words and new words that are being introduced. In addition to the Frayer Model, some strategies that are effective for teaching vocabulary are clustered word walls (an area in the classroom where words that reflect current instruction are posted), semantic maps, vocabulary bingo, personal word lists, and comparison grids.

Help students organize and keep track of words.

Have students organize their vocabulary words in a notebook, file box, or on the computer. It is best to organize words by content area and topics or units of study within the content area. It is equally important when students are setting up a vocabulary notebook that they create a separate section titled "My Words" for their personal use. In addition, students should leave room between words in their notebook so they can revisit the words and elaborate upon their learning.

Asking students to add a picture or graphic along with the definition will assist them in learning and remembering the definition and the word. Establishing a system for organizing vocabulary words can provide a framework for students to practice, review, and use vocabulary on an ongoing basis.

Assess to determine how vocabulary instruction is enhancing student achievement.

Most vocabulary assessment is done by the teacher through classroom observations. Teachers determine which words seem to cause trouble for students and then work these words into vocabulary instruction activities. The following classroom processes can provide information regarding vocabulary acquisition.

1. Anecdotal Evidence

Anecdotal evidence is a way to see if students are meaningfully incorporating new vocabulary into their speaking, reading, and writing. Teachers collect this information through student conversations, student presentations, student writing, and vocabulary notebooks.

2. Pre- and Post-Vocabulary Quiz

Prior to the unit of study, pre-vocabulary quizzes can help determine students' level of vocabulary knowledge and which words to teach. Similarly, post-vocabulary quizzes help determine growth after instruction. Share this information with students in order to help them focus on what they need to learn.

3. Cloze Procedure

Cloze procedures are short (250 words) passages taken from reading materials found in classroom resources. These passages have key vocabulary words deleted and replaced with a blank line. Students read the passage and fill in the missing words based on what makes sense using context clues. Teachers can administer cloze passages to the whole class as a starting point to determine vocabulary needs.

4. Vocabulary Flash Cards

A quick way to assess students' vocabulary knowledge is the flash card technique. Academic words specific for grade levels and content areas are printed on individual cards and shown to students, who provide an explanation. Although this is not an authentic assessment, teachers can use this technique to determine the direction of classroom instruction.

Keep reminding yourself what effective vocabulary instruction looks like in the classroom.

Here are some key points we have covered in this booklet:

1. Decide which terms and phrases are critical for students to know in order to be successful in learning the content.
2. Decide when you will teach the words and phrases from the customized list for your grade level or course.
3. Engage students in the five-step process for learning the direct instruction words. Model the strategies and provide students with feedback as they engage in the process.
4. Make sure that students have multiple (six) encounters or interactions with words in a context.
5. Provide students with ways to organize and keep track of the words they are learning.
6. Gather evidence that students know and understand the words presented.

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Essential Skills for Academic and Lifelong Success

Because literacy skills are an important key to student success, McREL provides educators with services that translate rigorous research on literacy into practical classroom applications. Contact us to schedule a literacy workshop or to request a product catalog for ordering these popular manuals:

- *Teaching Reading in the Content Areas: If Not Me, Then Who?, 2nd ed.*
- *Teaching Reading in Mathematics*
- *Teaching Reading in Science*
- *Teaching Reading in Social Studies*
- *Teaching Writing in the Content Areas*
- *For the Love of Words: Vocabulary Instruction that Works*
- *Scaffolding Literacy Development in the Preschool Classroom*
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