



# ACADEMIC CONTENT CLASSES

**SCIENCE**

**VOCABULARY**

*Plus*

**Reading and Spelling Intervention**

- *Parallels important science vocabulary and improves content area reading, spelling, and writing*
- *Helps at-risk students while teaching important content for all students*

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# Teacher's Guide

With *Success in Academic Content Classes, Science Vocabulary* science teachers provide reading and spelling intervention, helping at-risk students succeed and teaching important content to all students. The program provides a scaffold to textbook reading and common core standards.

## Introduction

For many students, reading and spelling problems that begin in elementary school lead to academic failure in middle school and high school. Students who read far below grade level are denied access to school success.

Middle school and high school students must decode, read fluently, and interpret books with complex words and technical information. Traditional reading intervention methods have not worked for many students. Even when students make progress in traditional interventions, they are not connected to the academic curriculum and its domain specific vocabulary.

*Success in Academic Content Classes, Science Vocabulary*, includes instruction in advanced decoding, domain specific vocabulary (science classroom vocabulary), spelling, and reading fluency (with oral **word, phrase, and sentence** timed reading). Students reading at grade three through high school levels benefit from the program.

*Success in Academic Content Classes, Science Vocabulary*, has seven lessons (with a packet for each lesson). **Each of the seven lessons has the same structure, making the program comfortable for students and easy for teachers to present.**

Presenting the program requires only that teachers become familiar with the lesson structure by using the For the Teacher directions given for lesson 1, following in the Teacher's Guide.

Most words students encounter after fifth grade are complex, content-specific words.

EASY TO USE IN THE REGULAR CLASSROOM

The unique program design makes it possible for all students to benefit from the same program.

When students are thousands of words behind in vocabulary, one solution is teaching domain specific vocabulary.

## LESSON 1

### ● For the Teacher:

For each student, duplicate and staple pages 2, 3, 4, 5, 6, and 7 to make lesson 1 packet. (When you are ready to begin lesson 1, give a lesson packet to each student.) For each student, also duplicate page 8, Spelling Test, Lesson 1, and page 9, Vocabulary Tests 1 and 2, Lesson 1, to be given after lesson 1 packet is completed.

### ● PAGE 1. (LESSON DIVIDER)

### ● PAGE 2. (WORD SORT)

Instruction 1. Pronounce words in word box with students. (Words are separated by syllables to help with pronunciation and spelling.) Discuss general word meanings with students. Students tell words with which they are familiar.

Instruction 2. Students write words under the correct ending spelling patterns. They write each word as one word.

### Instruction 3. (OPTIONAL BUT RECOMMENDED)

Students cut out word cards and use them for word sorting. Students practice sorting words into appropriate categories. They say words as they sort them. Later, they practice speed sorts to help them work toward automatic word recognition. Speed sorts work well with students in pairs or cooperative groups. Members of pair or group that completes the word sort in the shortest time are the winners. Winners usually receive bonus points or prizes.

### ● PAGE 3. (VOCABULARY STUDY 1)

Part 1. Instruction. Students write definitions for Vocabulary Study 1 words. Definitions are given on page 5. Tell students to study definitions as they write them because they will be tested on them. Discuss word meanings and examples with students.

Presenting words by syllables helps students break words into manageable parts.

Sorting words into categories helps students see features common to each word group.

Extra word exposure helps cement words into long-term memory.

Writing definitions helps imprint word meanings to memory and is an activity where all students can succeed.

Seeing words in different contexts aids in putting words into long-term memory.

A strong content area vocabulary improves text comprehension.

If decoding is slow, not automatic, students will have a difficult time comprehending what they read.  
"High speed word recognition frees a reader's cognitive resources so that meaning of the text can be the focus of attention."

Part 2. Instruction. Individual students draw personal pictures of vocabulary words they select for themselves. (For words that are difficult to draw with pictures, students write each word in an interesting, decorative way.) Personal drawings help students remember word meanings. After students have drawn pictures, they write a sentence about each picture they have drawn. To reinforce word meanings with all students, display drawings in classroom and discuss word meanings.

#### ● PAGE 4. (VOCABULARY STUDY 2)

Instruction. Students complete Vocabulary Study 2 the same as they completed Vocabulary Study 1. (They may complete this page at a later time or on another day.)

#### ● PAGE 5. (VOCABULARY DEFINITIONS)

#### ● PAGE 6. (TIMED WORD READING)

Part 1. Instruction. Students draw arc under each syllable in the words as you read the words at a quick, challenging pace.

Part 2. Timed Word Reading Card. Timed word reading increases student reading speed and automatic word recognition. Words are grouped by specific sound and visual patterns.

Instruction 1. Before timing, you and all students read the words aloud together.

Instruction 2. Then individually, students read as many words as they can in one minute, aloud softly to themselves, to you, or to a student partner. If students finish reading words, they start again at beginning and add to total number of words they have already read. One point is subtracted for each missed word. Students write scores at bottom of page. (Limit, or have no, interruptions of oral timed reading. If students need help, say word and let them continue reading.)

"Reading fluency refers to the ability of readers to read quickly, effortlessly, and efficiently with good, meaningful expression."

Research has demonstrated that helping students read in phrases will improve their reading fluency and overall reading achievement.

Good oral reading leads to better silent reading.

The spelling test improves decoding, pronunciation, and spelling.

The brain organizes words by patterns. Learning consistent word patterns helps students with spelling and word

## ● PAGE 7. (TIMED PHRASE AND SENTENCE READING)

Instruction 1. Before timing, you and all students read the phrases and sentences aloud together.

Instruction 2. Then individually, students read as many words in phrases and sentences as they can in one minute or two minutes aloud softly to themselves, to you, or to a student partner. If students finish reading, they start again at beginning and add to total number of words they have already read. One point is subtracted for each missed word. Students write their scores at bottom of page.

## ● PAGE 8. (SPELLING TEST)

Instruction 1. Spelling Test words are on page 73. Before administering test, write words on chalkboard and review them with students.

Instruction 2. (SAY TO STUDENTS:)

I will say each word. You will write the letters on the lines to complete each word.

Number 1 is solar. Write the letters on the lines to complete the word solar. Solar - *relating to or involving the sun* (solar energy) (REPEAT) solar.

Number 2 is polar. (CONTINUE PATTERN OF SAYING WORD, USING WORD IN PHRASE OR SENTENCE, AND REPEATING WORD.)

## ● PAGE 9. (VOCABULARY TEST 1 AND VOCABULARY TEST 2, LESSON 1)

Each Vocabulary Test reviews nine vocabulary words. Vocabulary Test 1 is based on Vocabulary Study 1. Vocabulary Test 2 is based on Vocabulary Study 2.

## TEST 1. Instruction.

Before administering Vocabulary Test 1 review words and word definitions from Vocabulary Study 1 orally, using general review or game with all students.

## TEST 2. Instruction.

Follow Vocabulary Test 1 instruction.

### ●PAGE 10. (WORD SEARCH PUZZLE)

Instruction. Students find words in word search puzzle.

For additional timed reading practice, 25 Graded Reading Passages (for science and social studies at approximately grade 3 through grade 10 readability levels) is offered at [www.StrugglingReaders.com](http://www.StrugglingReaders.com).

### END NOTES:

Cunningham, P.M. (1998). The multisyllabic word dilemma: Helping students build meaning, spell, and read "big" words. *Reading and Writing Quarterly*, 14(2), 189-218.

National Reading Panel. (2000). Report of the National Reading Panel: Teaching children to read. Report of the subgroups. Washington, DC: U.S. Department of Health and Human Services, National Institutes of Health.

Rasinski, T.V. (2003). *The fluent reader*. New York, NY: Scholastic, Inc.

Rasinski, T.V. (1990). The effects of phrase boundaries in texts. Bloomington, IN: ERIC Clearinghouse on Reading and Communication Skills (ED 313 689).

Rasinski, T.V., Padak, N., Linek, W., & Sturtevant, E. (1994). The effects of fluency development instruction on urban second grader readers. *Journal of Educational Research*, 87, 158-164.

**READING INTERVENTION PROGRAM**

**SCIENCE  
VOCABULARY**

**LESSON**



**-ER, -OR, -AR**



# SCIENCE WORD SORT, LESSON 1

riv-er	me te or	mo tor	cra ter
so lar	po lar	gla cier	mat ter
har bor	lu nar	pow er	wea ther
e qua tor	mus cu lar	pre da tor	
cal en dar	gen er a tor	ra dar	

● Write each word under the correct spelling. (Write each word as one word.)

**-er**

**-or**

**-ar**

river <u>er</u>		

# SCIENCE VOCABULARY STUDY 1, LESSON 1

## PART 1

● Write a definition for each word.

1. river \_\_\_\_\_
2. power \_\_\_\_\_
3. glacier \_\_\_\_\_
4. crater \_\_\_\_\_
5. matter \_\_\_\_\_
6. weather \_\_\_\_\_
7. calendar \_\_\_\_\_
8. lunar \_\_\_\_\_
9. solar \_\_\_\_\_



## PART 2

## WORD PICTURES

● Choose four interesting words from Part 1, above, and draw a picture for each word.


● On the back of this page, write a sentence about each picture.

## SCIENCE VOCABULARY STUDY 2, LESSON 1

### PART 1

● Write a definition for each word.

1. muscular \_\_\_\_\_
2. radar \_\_\_\_\_
3. polar \_\_\_\_\_
4. equator \_\_\_\_\_
5. harbor \_\_\_\_\_
6. motor \_\_\_\_\_
7. generator \_\_\_\_\_
8. meteor \_\_\_\_\_
9. predator \_\_\_\_\_



### PART 2

### WORD PICTURES

● Choose four interesting words from Part 1, above, and draw a picture for each word.


● On the back of this page, write a sentence about each picture.

**EXTRA CREDIT VOCABULARY WORDS:** carnivore, herbivore, and omnivore

# SCIENCE VOCABULARY DEFINITIONS, LESSON 1

## -ER

**crater** - a hole that has the shape of a bowl; the mouth of a volcano (*craters on the moon*)

**glacier** - a slow-moving river of ice and snow (*Are icebergs formed from glaciers?*)

**matter** - what all things are made of; anything that takes up space (*made of solid matter*)

**power** - force or energy that can be put to work (*electric power, gas power, or muscle power*)

**river** - a large natural stream of water flowing into an ocean, a lake, or another stream (*river erosion*)

**weather** - the temperature or conditions outside; wind, rain, sunshine, or snow (*cold weather*)

## -AR

**calendar** - a chart showing the months, weeks, and days of the year (*an electronic calendar*)

**lunar** - relating to the moon (*a lunar spacecraft*)

**muscular** - strong; having firm, strong muscles (*muscular biceps*)

**polar** - relating to or near the North Pole or the South Pole (*a polar bear*)

**radar** - a system that uses radio waves to find out the position of something one cannot see (*aircraft sighted on the radar screen*)

**solar** - relating to or involving the sun (*solar energy*)

## -OR

**equator** - the imaginary line around the middle of the earth that divides it into equal parts, north and south (*near the equator*)

**generator** - a machine that produces electricity (*an electric generator*)

**harbor** - an area of water which is sheltered from rough waters so that ships are safe inside it (*a safe harbor*)

**meteor** - a small, fiery solid body traveling through the earth's air (*A shooting star is a meteor.*)

**motor** - a machine that produces motion or power for doing work (*an electric motor or a gas motor*)

**predator** - an animal, such as a lion or shark, that hunts another animal for food (*Sharks are powerful predators.*)

# TIMED WORD READING, LESSON 1

**PART 1** ● Make an arc under each syllable.

mat ter pow er riv er matter power river matter power river matter

wea ther cra ter gla cier weather crater glacier weather crater glacier

---

mo tor har bor me te or motor harbor meteor motor harbor meteor

e qua tor gen er a tor pre da tor equator generator predator equator

---

so lar po lar lu nar solar polar lunar solar polar lunar solar polar

cal en dar mus cu lar ra dar calendar muscular radar calendar

---

**PART 2** ● Read the words. ● Write the number correct and the time.

## TIMED WORD READING CARD, LESSON 1

matter

power

river

weather

crater

glacier

motor

harbor

meteor

equator

generator

predator

solar

polar

lunar

calendar

muscular

radar

### BONUS WORDS

carnivore

herbivore

omnivore

NUMBER CORRECT \_\_\_\_\_ TIME \_\_\_\_\_

## TIMED PHRASE AND SENTENCE READING, LESSON 1



a polar bear

cold weather

solar energy

river erosion

muscle power

muscular biceps

near the equator

16

an electric motor

a lunar spacecraft

craters on the moon

made of solid matter

an electric generator

an electronic calendar

36

A shooting star is a meteor.

Sharks are powerful predators.

Are icebergs formed from glaciers?

Aircraft were sighted on the radar screen.

A herbivore feeds on plants.

A carnivore feeds on other animals.

An omnivore feeds on plants and animals.

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**TIMED READING 1, NUMBER OF WORDS CORRECT** \_\_\_\_\_ **TIME** \_\_\_\_\_

**TIMED READING 2, NUMBER OF WORDS CORRECT** \_\_\_\_\_ **TIME** \_\_\_\_\_

## SPELLING TEST, LESSON 1

1. \_\_\_ \_\_\_ / \_\_\_ ar

2. \_\_\_ \_\_\_ / \_\_\_ ar

3. \_\_\_ \_\_\_ / \_\_\_ ar

4. \_\_\_ \_\_\_ / \_\_\_ or

5. \_\_\_ \_\_\_ \_\_\_ / \_\_\_ or

6. \_\_\_ \_\_\_ / \_\_\_ \_\_\_ / or

7. \_\_\_ \_\_\_ \_\_\_ / er

8. \_\_\_ \_\_\_ \_\_\_ / \_\_\_ er

9. \_\_\_ \_\_\_ \_\_\_ / er

10. \_\_\_ \_\_\_ \_\_\_ / \_\_\_ \_\_\_ er

### BONUS WORDS

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NUMBER CORRECT \_\_\_\_\_