# HANDOUTS

## COMPREHENSION AND VOCABULARY

### TEACHING COMPREHENSION:

- SHARED READING
- "THE ORIGIN OF ZERO"—MARKED AND UNMARKED
- DRA (DIRECTED READING ACTIVITY ("PLANET HUNTERS DISCOVER A WORLD THAT COULD HARBOR LIFE")

### TEACHING VOCABULARY:

- CONCEPT ATTAINMENT
- WORD WATCH
- WORD RALLY
- TREASURE HUNT
- VSS (VOCABULARY SELF-SELECTION)

## Shared Reading

Shared Reading is a group reading lesson where all students have access to the text, can see the text and participate as readers, though they may be on different levels independently. The teacher models reading with fluency and invites the students to read along. In primary grades the students read along orally and in intermediate or middle grades the students may follow along silently or chime in chorally with the teacher on portions of the text. The texts chosen provide various instructional purposes and the teacher provides different levels of support as reading behaviors are modeled.
Close Reading is the instructional portion of a shared reading lesson. The teacher models a new strategy for word solving, fixup, phonics, text structures or other strategies. Responsibility is gradually released as the text is re-visited on subsequent days.

## Guiding Principles Shared Reading

☐ Shared Reading is a time to introduce new skills and strategies and to provide continued instruction through the use of a common text for each student.
☐ Shared Reading occurs daily for 10–20 minutes in a group setting.
☐ Shared Reading has a planned, specific instructional purpose with explicitly identified teaching points. This is Close Reading.
☐ Shared Reading instruction is differentiated according to the needs of the group.
☐ Shared Reading instruction uses a variety of text genres.
☐ Shared Reading instruction provides repeated experiences with the same text. This allows for new skills and strategies to be learned in a familiar text.
☐ Shared Reading instruction is designed to ensure student success.
☐ Shared Reading ensures that every child has access to a common text and that the students' eyes are on the text.
☐ Shared Reading encourages active student participation.
☐ Shared Reading is enjoyable.

## Shared Reading Possibilities Beyond Day One: Skills, Strategies, and Extensions

☐ For narrative, talk about the structure of the story — setting, problem, solution, characters, etc. Also, why a character behaves in a certain way, how students think the problem will be solved, the author's intentions, how students think the story will end, or how the character or characters have changed throughout the story.
☐ For nonfiction, how the author conveys information, something important students learned or are learning, or questions students have.
☐ Choral reading
☐ Oral cloze—pause, allowing students to fill in the next word

□ Visual cloze—show beginning of a word. Using beginning and meaningful context, students can finish the word. Give strategies for students to figure out words they come to that they don't know.
□ Have students act out the piece.
□ Have students illustrate the story, using the text on the page, creating a familiar read for your classroom library.
□ Focus on a comprehension strategy, such as questioning, visualization, etc.
□ Occasionally, ask students to read a small section independently, reread, or read with a partner for a set purpose (read to find out, find an important sentence, find describing words). Teach as needed during this time.
□ Have students discuss in groups of two or three — what they notice, what they wonder about, what they predict, connections they make, what they are thinking at this point, the author's purpose, a favorite part of the story, the ending of the story.
□ Have students practice reading for fluency.
□ Respond in writing to a question or issue from the reading.
□ Students use the skills learned in shared reading in other reading activities; book reports, reading conferences, reading reflection journals, etc.

## Procedures: Shared Reading: Teacher Preparation

□ Plan your teaching points for close reading based on objectives and student needs. What do you want the students to learn?
□ Pick your Shared Reading piece, remembering to vary the level of text each week--some high, medium, and low throughout the year. Teacher reads the piece thoroughly and mines* it for teaching points.
□ Prepare some way for all students to be able to see the text, whether it is a Big Book, a poster or chart, an overhead transparency, or individual copies of the text for the students to have in front of them.
□ Examples of Shared Reading materials may include: Big Books, poems, songs, lifted text, or nonfiction magazines such as Rigby's Comprehension Quarterly or Time for Kids.

## Day One: An Introduction to and Enjoyable Reading of the Text

□ Introduce the piece. As appropriate to the text, talk about the title, cover, author, and other needed background knowledge and vocabulary. Encourage predictions.
□ Students may follow along visually with their eyes as the teacher reads the piece aloud fluently.
□ Discuss meaning of the text before close reading activities.
□ In primary grades close reading occurs on familiar text only.

## Subsequent Days:

□ Revisit the piece and discuss the mini-lessons you have hadpreviously with this text.
□ Plan and deliver new mini-lessons using this text

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# The Origin of Zero

## Much ado about nothing: First a placeholder and then a full-fledged number, zero had many inventors

By John Matson | Friday, August 21, 2009 | 32 comments

The number zero as we know it arrived in the West circa 1200, most famously delivered by Italian mathematician Fibonacci (aka Leonardo of Pisa), who brought it, along with the rest of the Arabic numerals, back from his travels to north Africa. But the history of zero, both as a concept and a number, stretches far deeper into history—so deep, in fact, that its provenance is difficult to nail down.

"There are at least two discoveries, or inventions, of zero," says Charles Seife, author of *Zero: The Biography of a Dangerous Idea* (Viking, 2000). "The one that we got the zero from came from the Fertile Crescent." It first came to be between 400 and 300 B.C. in Babylon, Seife says, before developing in India, wending its way through northern Africa and, in Fibonacci's hands, crossing into Europe via Italy.

Initially, zero functioned as a mere placeholder—a way to tell 1 from 10 from 100, to give an example using Arabic numerals. "That's not a full zero," Seife says. "A full zero is a number on its own; it's the average of −1 and 1."

It began to take shape as a number, rather than a punctuation mark between numbers, in India in the fifth century A.D., says Robert Kaplan, author of *The Nothing That Is: A Natural History of Zero* (Oxford University Press, 2000). "It isn't until then, and not even fully then, that zero gets full citizenship in the republic of numbers," Kaplan says. Some cultures were slow to accept the idea of zero, which for many carried darkly magical connotations.

The second appearance of zero occurred independently in the New World, in Mayan culture, likely in the first few centuries A.D. "That, I suppose, is the most striking example of the zero being devised wholly from scratch," Kaplan says.

Kaplan pinpoints an even earlier emergence of a placeholder zero, a pair of angled wedges used by the Sumerians to denote an empty number column some 4,000 to 5,000 years ago.

But Seife is not certain that even a placeholder zero was in use so early in history. "I'm not entirely convinced," he says, "but it just shows it's not a clear-cut answer." He notes that the history of zero is too nebulous to clearly identify a lone progenitor. "In all the references I've read, there's always kind of an assumption that zero is already there," Seife says. "They're delving into it a little bit and maybe explaining the properties of this number, but they never claim to say, 'This is a concept that I'm bringing forth.'"

Kaplan's exploration of zero's genesis turned up a similarly blurred web of discovery and improvement. "I think there's no question that one can't claim it had a single origin," Kaplan says. "Wherever you're going to get placeholder notation, it's inevitable that you're going to need some way to denote absence of a number."

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# DRA: Directed Reading Activity

- Select 4-5 critical vocabulary words and come up with short, clever ways to introduce them
- Write the Purpose-Setting Question (like the Big Question)
- Introduce the vocabulary and the topic of the reading (5-10 minutes). Be sure to write the vocab words on the board
- Give the Purpose-Setting Question and write it on the board.
- Students read the text individually (or perhaps you do it in Shared Reading format)
- When finished, ask the PSQ and discuss

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# Planet Hunters Discover a World That Could Harbor Life

## A newfound "super-Earth" just 20 light-years away appears to reside in the habitable zone of its host star

By John Matson | Thursday, September 30, 2010 | 31 comments

After more than a decade of telescopic monitoring, astronomers have added two newfound worlds to a nearby planetary system already known to harbor four other planets, and one of the new discoveries looks to be the kind of place where life might be able to take hold.

"Since the beginning of this hunt we've tried to find planets at about the size of the Earth with temperatures so that water can exist," said one of the researchers, Steven Vogt of the University of California, Santa Cruz, in a Webcast press briefing on September 29. "This is the first exoplanet that really has the right conditions for water to exist in liquid form on its surface." Vogt and his colleagues are set to publish their findings in a future issue of *The Astrophysical Journal*.

By monitoring a small, nearby star for 11 years with one of the 10-meter Keck telescopes in Hawaii and combining the data with 4.3 years of similar observations published by another team, Vogt and his co-authors found two orbiting planets, with respective masses of at least 3.1 times and seven times the mass of Earth. Both qualify as quite small in the field of known exoplanets, in which most of the hundreds of worlds that have been discovered are giants larger than Jupiter. The planetary system, which encircles the red dwarf star Gliese 581 only 20 light-years away, now ranks among the largest known. (In August it was announced that another planetary system boasts at least five, and possibly seven, worlds.)

Of the four previously known planets orbiting the diminutive star, two bracket what astrobiologists call the habitable zone, or the "Goldilocks zone"—the region of space surrounding a star that is neither too hot nor too cold for liquid water and just possibly life. The smaller of the two new worlds, Gliese 581g, orbits right between those two planets, placing it more squarely in the star's habitable zone. Nevertheless, Earthlings would not mistake Gliese 581g for their home planet—in addition to its so-called super-Earth dimensions, it orbits a star far smaller and dimmer than the sun, and its average surface temperatures would vary dramatically, from well below freezing on its night side to scorching hot on the day side.

But somewhere between those temperature extremes, which Vogt estimated might range from −35 to 70 degrees Celsius, would exist stable climatic bands, which Vogt called "eco-longitudes," within which liquid water might persist. Because the planet is probably tidally locked, showing only one hemisphere to its star just as the moon does to Earth, the temperate band between permanent daylight and permanent night might afford life a toehold. "There is a continuum of temperatures in between that are stable," Vogt said. "You just have to move around on the surface."

The actual surface temperatures of Gliese 581g depend on a number of factors that are currently unknown—such as the planet's reflectivity and the strength of any greenhouse effect it might have. "We can't say anything for sure about its atmosphere or about water," study co-author Paul Butler of the Carnegie Institution of Washington said during the Webcast. But what is known about the planet qualifies it as at least potentially habitable. "Its mass would be sufficient to hold a nice, strong atmosphere like Earth," Butler said, "and there would be places on the surface that would be sufficient for water."

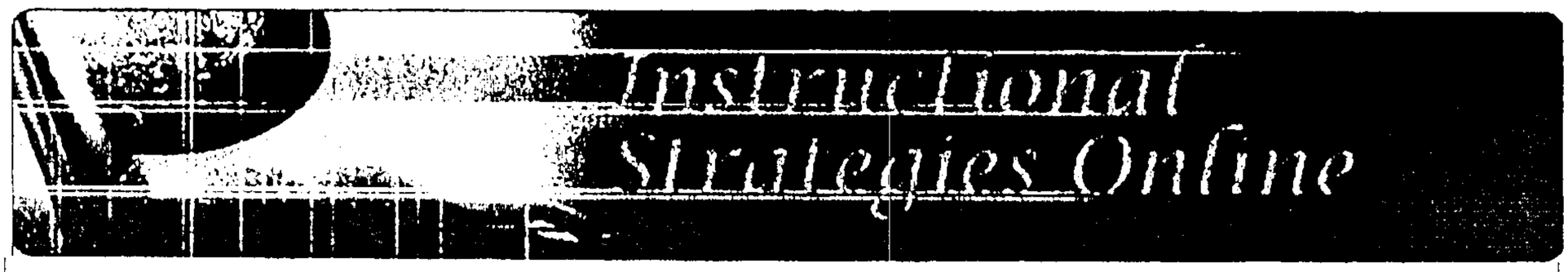
The radial-velocity, or "wobble," technique used to identify the new planets relies on tracking Doppler shifts in the host star's light as orbiting planets tug on the star, drawing it nearer to and then farther from Earth. The radial-velocity method has been an extraordinarily productive technique since it was used to identify the first exoplanet orbiting a sunlike star in 1995, but it yields a partial portrait of an exoplanet—revealing only lower bounds for planetary masses, for instance, which can produce ambiguities about whether a planet is rocky, like Earth, or gaseous, like Jupiter, or whether it is an even larger object such as a brown dwarf. In the case of Gliese 581g, it appears that the stability of the planetary system would be compromised if the planet were much more than 4.3 times as massive as Earth.

To get a better picture of the newfound world, astronomers would need a complementary observation, such as watching a partial eclipse (known as a transit) as the planet passes in front of its star, or making a precision measurement of the star's side-to-side motion in the sky. With a planetary transit, researchers can even identify constituents of a planet's atmosphere that might indicate the presence of biological organisms there. But Gliese 581g does not appear properly aligned to transit its star from Earth's vantage point. And instruments for astrometry, which measure stellar positions on the sky, are not yet up to the task. "We're hopeful that continuing advances in astrometry will lead to a confirmation of this discovery and lead to a more precise mass estimate for this planet," Butler said.

Even so, the new paper presents "a marvelously intriguing result," says Geoff Marcy, a University of California, Berkeley, astronomy professor who has collaborated with Vogt and Butler on numerous planet discoveries in the past but was not involved in the new study. Gliese 581g, Marcy says, "is certainly extraordinary for its low mass and for being in the habitable zone."

"It's a very exciting step forward," says David Charbonneau, an astronomer at the Harvard–Smithsonian Center for Astrophysics, who adds that the group collected some "really beautiful data" over the years. Teasing out the subtle signature of small planets in radial-velocity data takes a wealth of observations, especially when the signal is dominated by larger planets in the system, and others are sure to investigate whether the signature of Gliese 581g is real. "There are competing groups that will do their best to see if they can confirm the signal or not," Charbonneau says. "They're probably running those analyses right now, because they learned about this five minutes ago."

Even if the planet proves out, the question of whether Gliese 581g actually hosts any biological activity will remain open. "Any discussion of life at this point is of course speculative," Butler cautioned. "That being said, on Earth, anywhere you find liquid water you find life in abundance."




February 16, 2011February 16, 2011



## What is Concept Attainment?

Concept Attainment is an indirect instructional strategy that uses a structured inquiry process. It is based on the work of Jerome Bruner. In concept attainment, students figure out the attributes of a group or category that has already been formed by the teacher. To do so, students compare and contrast examples that contain the attributes of the concept with examples that do not contain those attributes. They then separate them into two groups. Concept attainment, then, is the search for and identification of attributes that can be used to distinguish examples of a given group or category from non-examples.

## What is its purpose?

Concept attainment is designed to clarify ideas and to introduce aspects of content. It engages students into formulating a concept through the use of illustrations, word cards or specimens called examples. Students who catch onto the idea before others are able to resolve the concept and then are invited to suggest their own examples, while other students are still trying to form the concept. For this reason, concept attainment is well suited to classroom use because all thinking abilities can be challenged throughout the activity. With experience, children become skilled at identifying relationships in the word cards or specimens. With carefully chosen examples, it is possible to use concept attainment to teach almost any concept in all subjects.

Advantages:

- helps make connections between what students know and what they will be learning
- learn how to examine a concept from a number of perspectives
- learn how to sort out relevant information
- extends their knowledge of a concept by classifying more than one example of that concept
- students go beyond merely associating a key term with a definition
  concept is learned more thoroughly and retention is improved

## How do I do it?

Steps of Concept Attainment:

1. Select and define a concept
2. Select the attributes
3. Develop positive and negative examples
4. Introduce the process to the students
5. Present the examples and list the attributes
6. Develop a concept definition
7. Give additional examples
8. Discuss the process with the class

9. Evaluate

A Math example:

- First the teacher chooses a concept to developed. (i.e. Math facts that equal 10)
- Begin by making list of both positive "yes" and negative " no" examples: The examples are put onto sheets of paper or flash cards.
- Positive Examples: (Positive examples contain attributes of the concept to be taught) i.e. 5+5, 11-1, 10X1, 3+4+4, 12-2, 15-5, (4X2)+2, 9+1
- Negative Examples: (for examples choose facts that do not have 10 as the answer) i.e. 6+6, 3+3, 12-4, 3X3, 4X4, 16-5, 6X2, 3+4+6, 2+(2X3), 16-10
- Designate one area of the chalkboard for the positive examples and one area for negative examples. A chart could be set up at the front of the room with two columns - one marked YES and the other marked NO.
- Present the first card by saying, "This is a YES." Place it under the appropriate column. i.e. 5+5 is a YES
- Present the next card and say, "This is a NO." Place it under the NO column. i.e. 6+6 is a NO
- Repeat this process until there are three examples under each column.
- Ask the class to look at the three examples under the YES column and discuss how they are alike. (i.e. 5+5, 11-1, 2X5) Ask "What do they have in common?"
- For the next tree examples under each column, ask the students to decide if the examples go under YES or NO.
- At this point, there are 6 examples under each column. Several students will have identified the concept but it is important that they not tell it out loud to the class. They can however **show** that they have caught on by giving an example of their own for each column. At this point, the examples are student-generated. Ask the class if anyone else has the concept in mind. Students who have not yet defined the concept are still busy trying to see the similarities of the YES examples. Place at least three more examples under each column that are student-generated.
- Discuss the process with the class. Once most students have caught on, they can define the concept. Once they have pointed out that everything under the YES column has an answer of 10, then print a new heading at the top of the column (10 Facts). The print a new heading for the NO column (Not 10 Facts).

**How can I adapt it?**

This activity can be done on the chalkboard, chart paper or overhead projector to a large or small group. It also works well as one-on-one work. Rather than starting with the teacher's concept, use a student's concept. Concept attainment can be used to introduce or conclude a unit of study.

Variations on the Concept Attainment Model

- Present all of the positive examples to the students at once and have them determine the essential attributes.
- Present all of the positive and negative examples to the students without labeling them as such. Have them group the examples into the two categories and determine the essential attributes.

- Have the students define, identify the essential attributes of, and choose positive examples for a concept already learned in class.
- Use the model as a group activity.

**Assessment and Evaluation Considerations**

Have the students:

- write the definition from memory.
- determine positive and negative examples from a given group.
- create their own examples of the concept.
- "think aloud"
- write a learning log
- do an oral presentation
- create a web, concept map, flow chart, illustrations, KWL chart, T chart

**Teacher Resources**

- Concept Attainment Template
- Concept Attainment Lesson: Metaphors - Language Arts
- Concept Attainment Lesson: Paradoxes - Language Arts
- When I Was Little - Social Studies
- Transportation Concept Attainment Cards - Social Studies
- What is Culture? - Social Studies
- Developing Concept Attainment in Grade 1 Math
- Concept Attainment lesson on Polygons - Math
- Concept Attainment in French Class - "Things which don't really exist!" or "Ca n'existe pas!"
- Concept Attainment in French class - "Boulangerie (Bakery)"

# Word-Watch!

Group members:

As you watch "The Crimson Pirate," write down every word you hear from our vocabulary list. Record the word, and the context, or way in which it was used. Some words may be used more than once. Record the word each time.

| Word: | The Context: |
| --- | --- |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

# Word Rally

Name: _____

Group Members: _____, _____, _____, _____

Name 4 things that you would be dubious about trying:

_____

_____

_____

_____

Name 3 people you consider to have great tenacity, and give your reason.

| Person | Why he/she has ~~tear~~ tenacity: |
| --- | --- |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Name 3 things that recede:

_____

_____

_____

Name 4 diseases that are mortal:

_____

_____

_____

_____

Name 4 feelings that a pariah might have:

_____

_____

_____

_____

Name 4 things you could say about a song to malign it:

_____

_____

_____

_____

What was ironic about the ending of each of these stories:

"Too Soon a Woman" _____

_____

"The Man Without a Country" _____

_____

"The Oklahoma Land Run." _____

Name 2 agrarian activities:

_____

_____

_____

What are 3 changes in the weather that would lead you to deduce that a storm was on the way: _____,

_____,

_____

# Yo Gods! The Treasure Hunt

Name: _____ Date: _____ Bells: _____

Use the information on pp 575-627 and from class discussion fill-in the blanks correctly. Each word is hidden in the blanks below:

I A W H P S A M H U A U P E A C H E S L V S
P X S I P P P F O R D P E P A X R D N O J L
C W K A N T H R O P O M O R P H I C S L B I
O D I B Y T R D O R O S I L I V E E C Y A P
Y M D W M S O L Y M P U S E L N B K O M N J
O X U E R I D A M U E O H E P O O B F P A O
M M D A H S I K D S R T D L X R F E F G N J
Q A C U U L T P E E J Z H P O S E R E X A F
Z R G N L B E D M S D E M E T E R U E V S I
A W O E K X H S O C K X O B D E Z S B L C S
L R M A A F H E P H A E S T U S E F T I M H
C S E U R Y S T H E U S L C H L J A T Y B Z
A R N J C T H C O Y O T E I U Y H S E N X P
N T O G A C E Y D R O A E C V C I B K J N M
T K M N O V D M N J A R R I D E I A N I R A
H E V B I N Z S I C F E Y A H E R G O T D P
D G E L A W x A E S H R K T C F I S W A B M
P x Y U T P V L N F M E Y B H H G J L X U D
O T Q A M R O E O T E L R A A H N N E P E R
S C H T E D K S L G O D R A R S I E D D S T
M V A N P E R S E P H O N E I K E N G T E D
O W I T V A G O I I F M C R O N I S E N H K
R M I A L C M E N E D E M E T E R N I X C I
P V U L C A N K I M M O R T A L T M H C F C
H O I L N E S I C E M I N E R V A K C A S K
A P O L L O A N T A E U S Q L F N N A L F H
Q F A M I N O T A P H R O D Q I K N O W L E

1. She was swallowed by the earth to become the bride of Pluto: _____ (Greek name)
2. Volcanoes are named after this god: _____.
3. The Greeks thought the sun was a goblen _____ riding across the s
4. Because the Greeks were _____, they had many different temples where they worshipped.

6. These two gods are complementary because one rules the sun, the other the moon: _____ and _____. (Greek names)
7. The home of the gods was atop Mt. _____.
8. A female spirit who inhabits a part of nature is called a _____.
9. His metal-working skills compensated for his lameness: _____ (Greek name)
10. She was born of the sea: _____ (Greek name).
11. He was the brother of Hades and Zeus: _____ (Greek name).
12. They were the creative spirits that inspired men and women in the arts: ___
13. In the story of Prometheus, fire symbolized _____.
14. We get the word "Cereal" from her Roman name. Her Greek name is _____
15. The Greek gods were _____: The Greeks thought of them as special people.
16. He dared to anger Zeus to save mankind: _____.
17. His arrows caused people to fall in love: _____ (Greek name).
18. Demeter placed _____ in the fire to make him _____.
19. Because Demeter was so upset, crops failed to grow and a _____ gripped the earth.
20. ~~Because~~ When he ruled the earth, summer was the only season: _____.
21. Zeus chained Prometheus to a rock and sent a bird to eat his ____.
22. This animal played the role of Prometheus in Indian stories: _____
23. He is the twin of Artemis: _____.
24. The word "arachnid" comes from her name: _____.
25. The two mountains standing at the mouth of the Mediterranean are called the _____ _____.
26. Phaethon was the son of _____, a mortal, and the Sun.
27. The most obnoxious man on earth, _____, was Hercules' master.
28. _____ was jealous of Hercules because he was the son of her husband and another woman.
29. Arachne infuriated _____ when she wove a picture telling secrets about the gods.
30. Hercules tricked _____ into getting the golden apples for him.
31. Hercules was unjustly punished by his wife, _____, who gave him a robe that burn
32. The Sun swore by the River _____ that he would keep his promise.
33. Hercules killed the giant _____ by lifting him off the ground and strangling him
34. The guard of the gates to the underworld was the 3-headed _____
35. Both _____ and _____ visited mortals dressed as old women.

## *How to do . . . . . .*

VSS

Student teachers' and teachers' first concern about VSS is the feature that allows students to select the words to be learned. My most frequent question about VSS is, "Won't they (the students) choose the simplest words?" The answer is a resounding "No." The simplest words are *not* the most interesting or useful or important to learning content. Students quickly discern the value word study has *and* see that by choosing interesting and important words they (1) make classroom learning more fun, and (2) serve their own goal of learning the subject matter (and getting good grades). Students love VSS; so do teachers who have tried it. The following guidelines will be helpful as you adapt VSS for your subject area:

1. After reading (or other learning event), ask student groups to find a word or term that they would like to study or learn more about. Students are to be prepared to
   a. Identify the word/term in context.
   b. Tell where they found it in the text.
   c. Tell what they think the word/term means.
   d. Tell why they think the word/term is important to the topic and should be on the class vocabulary list.
2. Accept word nominations with discussion of possible meanings and reasons for learning (*a* through *d* above). Encourage extension and refinement of meanings through collaboration and pooling of information.
3. Nominate the word you wish to have on the list and supply all of the requisite information (*a* through *d* above).
4. Narrow class list to predetermined number (if needed).
5. Refine definitions as needed for each word/term.
6. Direct students to record final list words and definitions (as developed in class discussion) in vocabulary journals, on maps, or wherever you wish.
7. Develop VSS lesson activities for reinforcement (e.g., SFA grid).
8. Provide time for students to complete lesson activities (e.g., semantic mapping) and/or make out-of-class assignments.
9. Incorporate vocabulary items into end-of-chapter/unit test, as appropriate.