

# Semantic Feature Analysis

You are plowing through a magazine article brimming with densely packed information about allergies—*allergic rhinitis, hay fever, antihistamines, pollen, hives, heredity, dust mites, immune system, and antibiotics*—what a load of technical vocabulary! A visual representation of the key terms would aid you in developing a strong conceptual understanding of this information. Then you could readily perceive what factors lead to which reactions and what treatments or preventative measures will combat which types of allergies. In all likelihood, you would then feel more comfortable conversing about allergies using the related terminology.

It is well established that vocabulary knowledge is a key predictor of how well a student will comprehend a given text. But developing vocabulary knowledge involves much more than learning dictionary definitions of words. Students need vocabulary instruction that helps them to broaden their understanding of concepts and to differentiate between related or similar words.

The Semantic Feature Analysis strategy (Johnson & Pearson, 1984) is a technique that guides students through analyzing vocabulary by identifying key characteristics and comparing these characteristics with other known concepts. Through the use of a matrix grid, students are able to code a number of key vocabulary or concepts in terms of several important qualities. When they have completed a semantic feature matrix, students have for reference a visual reminder of how various concepts are alike or different.

## Using the Strategy

Anders and Bos (1986) recommend using the Semantic Feature Analysis strategy as a learning tool in content classrooms. Using the strategy involves the following steps:

**1** Model Semantic Feature Analysis with your students by using a familiar category to illustrate the principles of the strategy. For example, place a blank Semantic Feature Analysis Grid (see Appendix, page 164) on an overhead transparency and choose a category, such as sports. For the vertical column, solicit various sports from the students, such as baseball,

football, tennis, track, wrestling, golf, and boxing. Ask students to offer different features of sports that may or may not be present in a particular example, such as “is played with a ball,” “is played as a team,” “is done as an individual,” “score is kept,” “players wear protective apparel,” and “has regular contact between opposing players.” Write each of these features in one of the slots that appear along the upper horizontal section of the grid. Guide students with coding each attribute for each sport.

Students will have a visual display of how various sports compare and contrast, and may be surprised to see the similarities among them.

**2** Select from your unit of instruction a category of concepts to be analyzed. Younger students will respond better to concrete concepts such as farm animals, vegetables, planets, or musical instruments. As students become more experienced, abstract categories such as forms of government, ecosystems, character traits, or geometric forms can be analyzed using this strategy. List several terms within this category in the left vertical column of the Semantic Feature grid (see Semantic Feature Analysis: Government Officials). The terms should be familiar to students. For example, terms within the category of farm animals might include *cow, dog, cat, chicken, pig, and horse*. Words within the category of people in government might include *president, senator, judge, and governor*. List three or four key features (traits, properties, or characteristics) that these terms may share. Features for farm animals may include *has fur, has feathers, can be house pet, makes food, and is used for meat*. Features for government officials may include “elective

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Source:

Buehl, D. (2001). *Classroom Strategies for Interactive Learning*, 2<sup>nd</sup> ed. Newark, DE: International Reading Association.

## SEMANTIC FEATURE ANALYSIS: GOVERNMENT OFFICIALS

Category	Features										
People in Government	<i>is an elective office</i>	<i>is an appointive office</i>	<i>has term lengths</i>	<i>has limits on service</i>	<i>can be held by any legal voter</i>	<i>passes laws</i>	<i>vetoos laws</i>	<i>administers laws</i>	<i>declares laws unconstitutional</i>	<i>serves the entire United States</i>	<i>works within the United States</i>
<i>President of United States</i>	+	-	+	+	-	-	+	+	-	+	+
<i>Governor of Wisconsin</i>	+	-	+	-	+	-	+	+	-	-	+
<i>U.S. Senator</i>	+	-	+	-	-	+	-	-	-	?	+
<i>Secretary of Defense</i>	-	+	-	-	+	-	-	+	-	+	+
<i>Supreme Court Justice</i>	-	+	-	-	+	-	-	-	+	+	+
<i>Ambassador to England</i>	-	+	-	-	+	-	-	?	-	+	-
<i>State Legislative Member</i>	+	-	+	-	+	+	-	-	-	-	+

(Buehl, 1995)

position," "passes laws," "has limits on service," and "serves the entire country."

**3** Have students code each feature in terms of whether the targeted words typically possess that feature. A plus sign (+) is entered if the word exhibits that feature; a minus sign (-) is entered if the word does not exhibit that feature. A question mark (?) can be entered if students are not sure. For example, students completing a Semantic Features Analysis of the Governor of Wisconsin would place plus signs in features such as, "is an elective office," "has term length," "can be held by any legal voter," "vetoos laws," "administers laws," and "works within the U.S." An analysis of the role of a U.S. senator might lead to minus signs in features such as, "is an appointive office," "has limits on service," and "can be held by any legal voter." Students might place a question mark in the feature of "serves the entire U.S.," for it could be argued that a senator serves the state he or she represents but may also have a national perspective.

**4** The Semantic Feature grid is now ready to accommodate more items within the selected category and more features to be analyzed. Ask students to offer additional terms and features to be included in the matrix. Other governmental officials suggested by

students could be members of the cabinet, state legislature, or city council. Other features might focus on terms in office or jurisdiction of service. These additional elements are then coded with plus or minus signs or question marks.

**5** Examine the grid and discuss similarities and differences between the terms for the category. Guide students in developing generalizations about how each word is unique from other related concepts. If two items have the same pattern of plus and minus signs, challenge students to identify a feature that will differentiate between the two.

In the government officials example, students can distinguish clearly the elective from nonelective positions and have a readily accessible information source to refer to and refine as they continue their learning in this topic area.

### Advantages

- Students begin to analyze key vocabulary as concepts rather than as short definitions.
- Students become aware of relationships between words within a specific category, and they develop sensitivity for how these words are similar and different.

- Students can expand and refine a Semantic Feature grid during a unit of study. As new information is learned and new concepts are encountered, they can be added to the grid.
- Students are provided with an excellent summary of a unit and review for exams. The grid also presents students with organized information for writing assignments.

Semantic Feature Analysis is a strategy adaptable to all grade levels and all content areas, including science, social studies, and math.

## References and Suggested Reading

- Anders, P.L., & Bos, C.S. (1986). Semantic feature analysis: An interactive strategy for vocabulary development and text comprehension. *Journal of Reading*, 29, 610-616.
- Buehl, D. (1995). *Classroom strategies for interactive learning*. Madison, WI: Wisconsin State Reading Association.
- Johnson, D., & Pearson, P.D. (1984). *Teaching reading vocabulary* (2nd ed.). New York: Holt, Rinehart, & Winston.
- Pittelman, S., Heimlich, J., Berglund, R., & French, M. (1991). *Semantic feature analysis: Classroom applications*. Newark, DE: International Reading Association.

*Cross Content Sample*  
**Semantic Feature Analysis**

**English Language Arts**

*After* reading narrative, epic, humorous, dramatic, ballad, free verse, and lyric forms of poetry

Help students understand the different literary devices used in different forms of poetry

	N	E	H	D	B	F	L
Stanzas							
Meter pattern							
Rhyme scheme							
Word repetition							
Accented syllables							
Refrain							
Alliteration							

**Science**

*Before, during, and after* reading about systems of the body

Help students determine the interrelationships (or not) of human systems that impact health.

Systems codes:

S = Skeletal M = Muscular E = Endocrine

C = Cardiovascular D = Digestive U = Urinary

L = Lymphatic R = Respiratory N= Nervous

	S	M	E	C	D	U	L	R	N
Fitness									
Heart									
Cancer									
Diabetes									
Obesity									
Liver									
Alzheimer's									

**Mathematics**

*During* reading of trigonometry text chapter on triangles

Use Semantic Feature Analysis to help students understand how various triangles are used in trigonometry to problem-solve real situations:

	Equi- angular	Acute	Obtuse	Right
Distance between various points in the universe				
Projective force and velocity				
Electric circuits				
Architectural design				
Light refraction				

**Social Studies**

*Before, during, and after* reading about economic systems in various countries and their impacts on the average citizen

Use Semantic Feature Analysis to predict and confirm the impact of elements of economic systems in various countries upon its people.

	US	Can	Mex	GB	Jap	Chi	Iraq
Employment							
Healthcare							
Retirement							
Recreation							
Education							
Agriculture							
Cultural arts							

# Semantic Feature Analysis: English

[grammar]	gerund	infinitive	verb	Transitive verb	Intransitive verb	Present tense	Past tense												
	run																		
	running																		
	to run																		

[Literature]	Protagonist	Antagonist	Flat character	Round character	Static character	Dynamic character													
	Harry Potter																		
	Voldemort																		
	Severus Snape																		
	Ron Weasley																		
	Dumbledore																		



## Semantic Feature Analysis: Branches of Government

<b>POWERS GRANTED BY THE CONSITUTION →</b>  <b>Branches of Government:</b> <b>EXECUTIVE</b> <b>LEGISLATIVE</b> <b>JUDICIAL</b>	Interpret laws																					
	Declare laws unconstitutional																					
	Enforce laws																					
	Pass laws																					
	Determine amount of taxes																					
	Can declare war																					
	Can reject appointments																					
	Can veto laws																					
	Leads the armed forces																					
	Approves appointments																					
	Can pardon criminals																					
	Appoints judges																					
	Can propose amendments																					
	Can overturn vetoes																					
	Approves treaties																					
Can impeach judges																						

<b>Powers →</b>	Coins money																					
	Regulates schools																					
	Makes marriage laws																					
	Raises an army																					
	Makes treaties																					
	Regulates trade																					
	Declares war																					
	Makes peace																					
	Ratify constitutional amendments																					
	Tax																					
	Issue Drivers licenses																					
	Conducts elections																					
	Establish Course																					
	Makes laws about wills																					
	Borrow money																					
Establish Post Office																						

# Semantic Feature Analysis: Mathematics

Equation:	Has a positive slope	Has a negative slope	Has a slope of zero	Has an undefined slope	Has a non-zero x-Intercept	Has a non-zero y-Intercept	Passes through the Origin													
$y = x$																				
$y = 3x + 2$																				
$y = (1/4)x - 7$																				
$y = 7 - x$																				
$y = 16 + (1/2)x$																				
$y = -5x - 2$																				
$y = x - 8$																				
$y = 4$																				
$x = -6$																				



# Semantic Feature Analysis Grid

Category:	Features											