

# Frayer Model

Imagine that you are watching a sporting event for the first time. How do you figure out the rules that govern that sport? Simply being told the rule is probably not adequate if you really want to understand it. You need to see the rule in operation. By observing play you begin to infer how the rule works as you notice when a rule is enforced or not enforced.

For example, football fans can come to understand the rule of pass interference by viewing games over time, which refines their understanding of the rule. Tackling a receiver before the ball is caught is pass interference, but tackling after the ball arrives is not.

Providing experiences with examples and non-examples, which share some but not all necessary characteristics, help students to construct rich and sophisticated meanings of important concepts. The Frayer Model (Frayer, Frederick, & Klausmeier, 1969) provides an excellent format for deepening understandings of these concepts. Using this model helps students differentiate between characteristics that define the concept and those that are merely associated with it. The Frayer Model also provides a visual way of distinguishing between items that represent the concept and items that are lacking some key characteristic of the concept.

## Using the Strategy

The Frayer Model is a graphic organizer that contains four compartments for recording information related to a concept (see Frayer Model for Vegetable). A blank Frayer Model (see Appendix, page 158) could be given to students as a worksheet or displayed on a chalkboard or overhead transparency. It could also be used as a study guide for students as they read. Using the strategy involves the following steps:

**1** Carefully analyze the concept you will be teaching to your students. Create a list of characteristics or attributes of the concept. For example, if the concept is *reptile*, the essential characteristics would include animal, cold-blooded, and vertebrate. If the concept is *vegetable*, essential characteristics would include nutritious food, found in non-woody plants, and contains vitamins and minerals.

**2** Introduce the concept to students and have them generate examples. An effective method is to have students form cooperative groups and brainstorm as many examples as possible. List examples on the chalkboard or overhead transparency. Encourage students to add to the list or to challenge examples already offered. Start a second list of common characteristics or attributes. Ask students to identify the key characteristics of a concept. Questions likely to emerge for the vegetable example might be, What makes a vegetable a vegetable? What do all vegetables have in common?

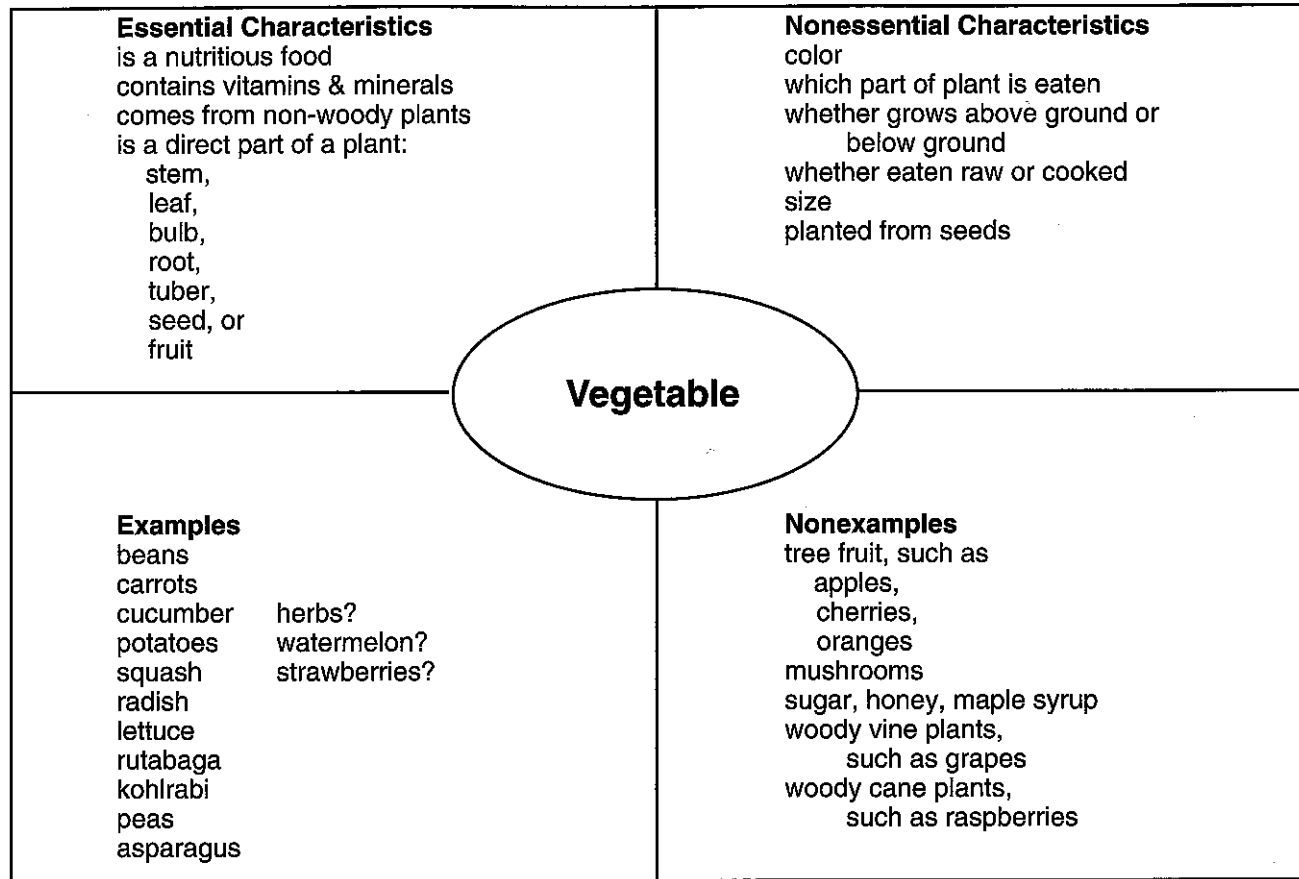
**3** Students are ready to read a selection about the concept. Distribute blank Frayer Models (see Appendix, page 158) to be used as an exercise while reading. Highlight the information to be entered in each section: essential characteristics, nonessential characteristics, examples, and nonexamples. Note that students will be reading to confirm or reject the information generated from the class. You may wish to have students work in pairs as they read and complete the grid.

When the students have completed their reading, go back to the original list generated by the students. On another Frayer Model, place examples and characteristics that students were able to confirm by the reading. Some items from their list may need to be placed in the nonessential and nonexamples sections. Students should also be encouraged to record the new information they learned from the reading in the appropriate section on the model. Further study may be needed to place some examples.

Students will likely pose additional questions: How are vegetables different from

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(Buehl, 1995; adapted from Frayer, Frederick, & Klausmeier, 1969)

fruits? Can certain edible weeds be counted as vegetables? How about mushrooms? Why are watermelons and strawberries referred to as fruit when they fit the definition of a vegetable? Do herbs have nutritional value? Can wheat be eaten as a vegetable in the same way as corn, or does it need to be processed first?

**4** After students practice using the Frayer Model, incorporate variations of this strategy into instruction. The Concept Attainment Strategy (Joyce & Weil, 1986) uses an inquiry process to introduce new concepts. Generate pairs of examples and nonexamples that exhibit major defining characteristics or attributes of a new concept. For example, a math teacher developing the concept *equation* might present the following pairs:

Example	Nonexample
$5 + 3 = 8$	$3 + 7$
$3x - 2y = 7z$	$5x + 2y - 3z$
$144 \div 6x = 12$	$27 \div 3 > 5$

Present a pair to students and ask them to determine the characteristic that differentiates the two lists. For example, students might note that all equations have equal signs. Note that initial determinations should be considered hypotheses that will be subject to revision as the process goes on and students analyze more pairs.

Provide additional examples and nonexamples including some that might add more specific defining characteristics. This allows students to test their hypotheses and refine their understanding of the new concept. For example, if they encounter a nonexample such as  $20 + 53 = 72$ , they will realize that there is more to the definition than merely the presence of equal signs. Nonexamples such as  $x + 3y \neq 105$  and  $22 - y < 30$  underscore that not all mathematical expressions are necessarily equations. Furthermore, a nonexample such as  $12 \div 4 \leq 3$  shows students that an expression could be true but may not be an equation. Ask students to revise the list of characteristics

or attributes of the equation concept. They now might observe that equations must have two sides, that the two sides must result in the same value, and that an equal sign must be between the two sides.

**5** To further establish the concept, assign students to work in pairs to generate their own examples and nonexamples of the concept. To initiate this phase of the strategy, provide students with a list of several possible examples and additional nonexamples. After they are labeled, have each pair of students continue locating or creating their own examples and nonexamples. These are then shared with the entire class and students receive feedback on their choices.

**6** Ask students to write a description of the equation concept that includes all the key or defining characteristics such as,

An equation has two sides separated by an equal sign. The numbers on each side must end up equaling the same value. It doesn't matter whether you add, subtract, multiply, or divide on either side, as long as both sides result in the same value.

When completed, the Frayer Model provides students with organized information that can easily be used for writing tasks and as a graphically organized study guide.

## Advantages

- Students go beyond mere definitions to flesh out deeper and more complex understandings of concepts.

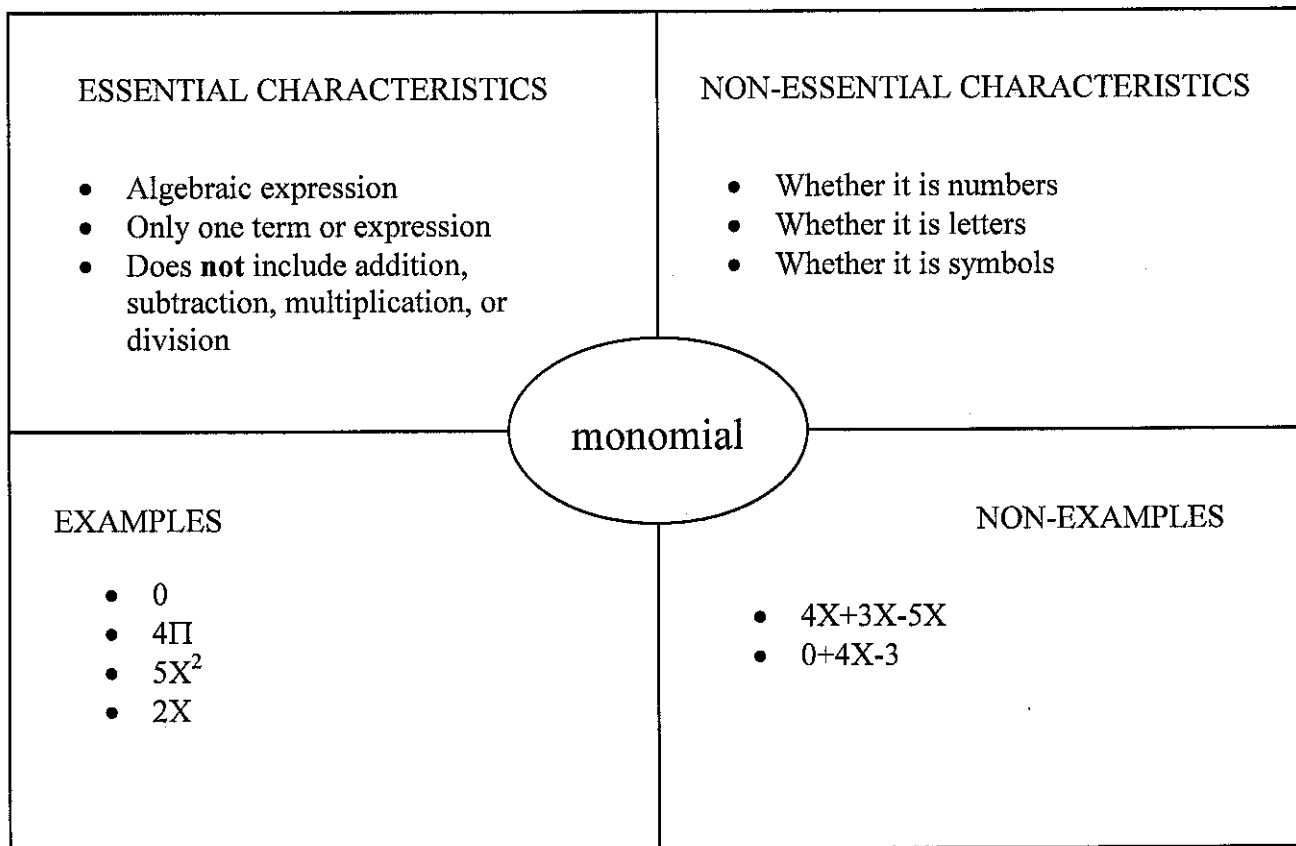
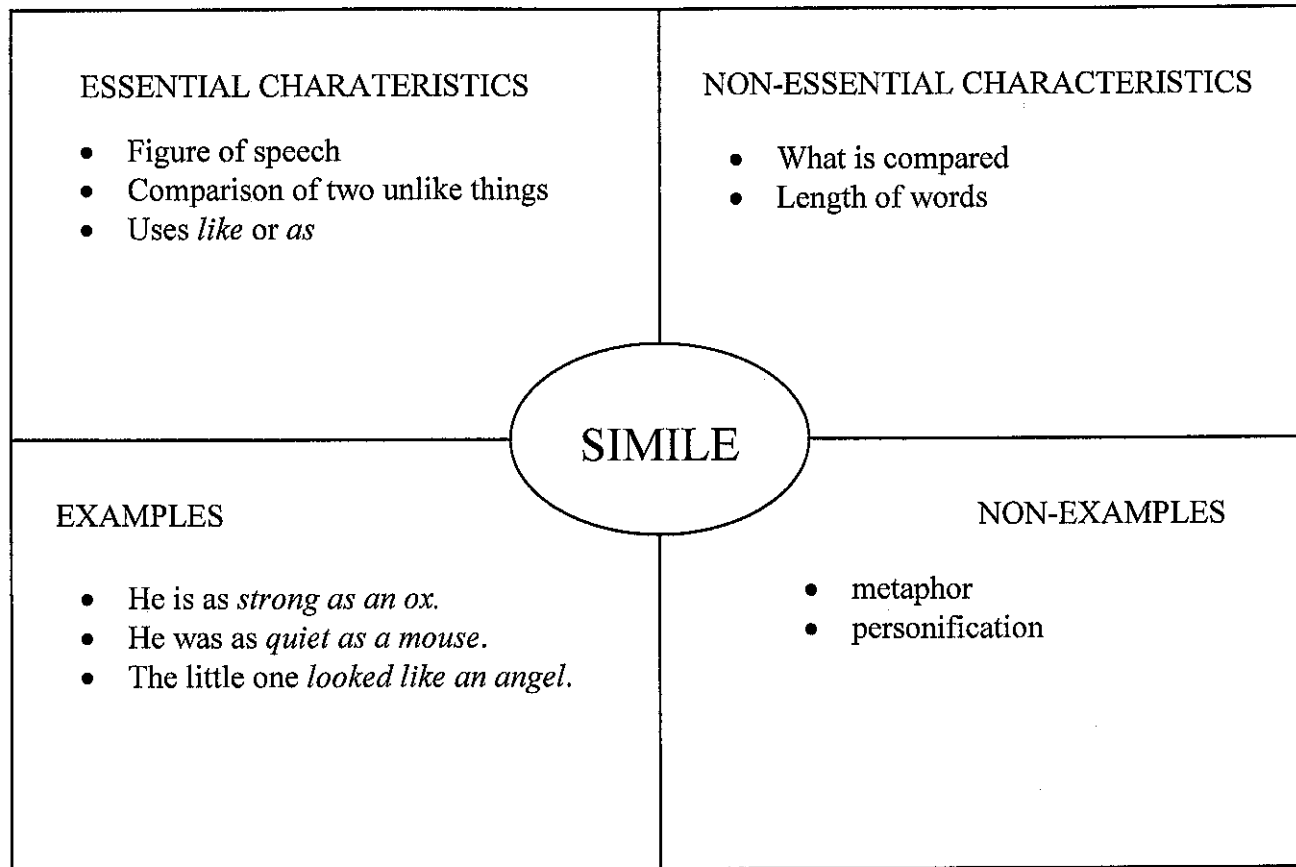
- Students are guided into differentiating between characteristics that define a concept and those that may be sometimes associated with it.
- Students are involved in a process of discovery that allows them to build a concept by encountering progressively more sophisticated examples and nonexamples.

The Frayer Model can be used as a strategy for lessons in all subject areas. It works especially well in teaching science concepts.

## References and Suggested Reading

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- Peters, C. (1979). The effect of systematic restructuring of material upon the comprehension process. *Reading Research Quarterly, 11*, 87-110.
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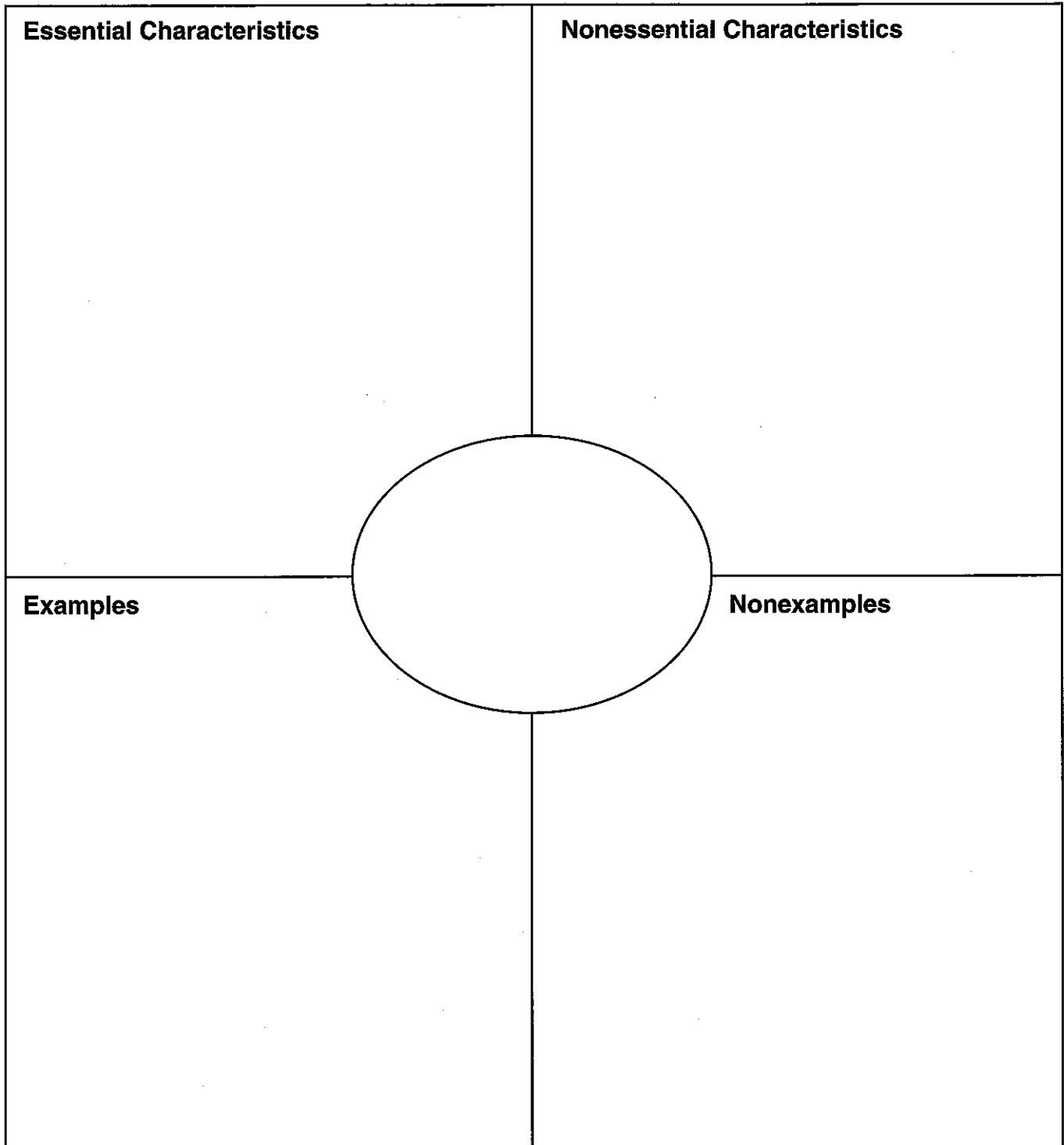
**FRAYER'S MODEL examples**



*Cross Content Sample*  
**Frayer Model**

<p><b>English Language Arts</b></p> <p><i>During and after</i> reading a novel independently after class study of literary devices</p> <p>Have students identify the predominant literary device used in their novel, such as figurative language, symbols, or personification. On poster board, they should write the device in the center of a Frayer Model template and complete the four quadrants, leading to a definition of the literary device.</p> <p>Post the charts around the classroom to remind students of the literary devices that can be used when writing.</p>	<p><b>Mathematics</b></p> <p><i>Before, during, and after</i> reading the relatively easy first chapter on coordinates and directed line segments in the complex textbook for analytic geometry</p> <p>Initiate a class habit of creating Frayer Model examples of analytic geometry terms that can be duplicated and kept in the front of their math notebook, starting with the easier terms that were taught in earlier math courses. Have students work in small groups to create definitions of the key terms, such as real numbers, rational numbers, periodic decimals, line segments, and coordinates. Gradually have students become independent in creating Frayer Model definitions of essential course concepts.</p>
<p><b>Science</b></p> <p><i>Before and after</i> viewing a video about the properties and changes of properties in matter</p> <p>Before the video, use the Frayer Model strategy for one of the film's concepts, telling students they will be creating a Frayer Model for a term or concept they do not fully understand during the video. After the video, have students work in pairs to create a Frayer Model for the term or concept each student found difficult. Have each pair exchange their Frayer Models with another pair and offer feedback and additional ideas.</p>	<p><b>Social Studies</b></p> <p><i>Before, during, and after</i> reading about and taking a self-assessment of personality styles in a psychology course</p> <p>Have each student create a Frayer Model about his/her personality style that was revealed in the self-assessment, working alone or with others of the same style, as they prefer. Then, group students with different styles together to share their Frayer Models and explain their differing traits and behaviors.</p>

# Frayer Model



(Frayer, Frederick, & Klausmeier, 1969)