

Getting Ready to Read: **Extending Vocabulary - Verbal and Visual Word Associations**

MATHEMATICS

The *Fruyer Model*, *Concept Circles*, and *Verbal and Visual Word Associations* are three examples of visual organizers that help students understand key words and concepts. A *Verbal and Visual Word Association* is a chart with 4 sections, where one section is reserved for a visual representation. The *Fruyer Model* is also a chart with 4 sections which can hold a definition, some characteristics/facts, examples, and non-examples of the word/concept. A *Concept Circle* is an organizer which is divided into sections to hold words/symbols that are connected by a common relationship. Extending vocabulary using *Verbal and Visual Word Associations* follows.

Purpose

- Identify unfamiliar concepts and vocabulary.
- Create a visual reference for concepts and vocabulary.

Payoff

Students will:

- develop understanding of key concepts and vocabulary.
- draw on prior knowledge to make connections among concepts.
- compare attributes and examples.
- think critically to find relationships between concepts and to develop deeper understanding.
- make visual connections and personal associations.

Tips and Resources

- Preview by scanning text (see Skimming and Scanning to Preview Text, pg. 32 *Think Literacy: Cross-Curricular Approaches, Grades 7-12*).
- Include targeted vocabulary/concepts in a classroom word wall. See ***Extending Vocabulary (Creating a Word Wall)***.
- Consider using the back of a word wall card for the vocabulary/concept organizer. When necessary, students can refer to the flip-side of a word wall card to clarify their understanding.
- Develop vocabulary/concept organizers in small groups using different strategies, for example, use a graffiti strategy by posting large Fruyer Model charts (with a different word/concept on each chart). Students then move in small groups to add their knowledge to each posted chart. See ***Extending Vocabulary – The Fruyer Model***.
- Strategically place the development of the organizer within the framework of the lesson/unit plan e.g., the day before beginning a geometry unit, assign a homework activity that asks students to find pictures of hexagons, octagons, and obtuse angles from printed media. Then, during the next day's "Minds On" activity, use the pictures in the development of the organizers.
- Be cognizant of math words that have different meanings in non-mathematical contexts (e.g., mean, rational, root, odd, radical, similar).
- Use organizers for developing understanding of symbols as well as words (e.g. \leq , π).
- Ensure that students understand that organizers such as the Concept Circle do not include all possible different types of examples.
See Teacher Resource, *Verbal and Visual Word Association – Samples*.
See Teacher Resource, *Verbal and Visual Word Association – Template*.

Further Support

- Encourage students to use the organizers for reference as they might use a glossary or dictionary.
- Consider allowing students to use organizers during assessments.
- Use vocabulary organizers as assessment *for* learning to plan next steps.
- Combine the features of the organizers. For example, include pictures that provide a personal association within the sectors of a concept circle.
- When students are familiar with each type of organizer, consider allowing student choice in which type of organizer is used.

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What teachers do	What students do
<p>Before</p> <ul style="list-style-type: none"> Preview an activity or unit of study for key vocabulary and concepts. Modify the preview list using input from student preview lists. Use a graphic organizer to identify relationships among the words found during the preview and to show connections to students' prior knowledge from previous units, grades and/or student experiences. Select words that can be represented visually. Nouns are good choices for this strategy. Determine which of the words are critical in developing deeper understanding of the mathematics in the activity or unit. Illustrate how to use the organizer with an example that has every part completed except the vocabulary term. 	<ul style="list-style-type: none"> Preview an activity or unit of study to create a list of unfamiliar vocabulary and concepts. Name the unknown vocabulary term in the example. Suggest alternative entries for the boxed areas. Ask questions to clarify understanding.
<p>During</p> <ul style="list-style-type: none"> Choose an Oral Communication strategy such as Think/Pair/Share. Instruct students to draw a rectangle divided into 4 sections (see Teacher Resource, <i>Verbal and Visual Word Association - Samples</i>). Direct students to write the term in one section then to complete the remaining sections with a visual representation, a personal association, and a definition. Circulate and assess <i>for</i> understanding making mental notes of incomplete or incorrect illustrations and definitions. Engage students in a whole class discussion to share responses. 	<ul style="list-style-type: none"> Draw a rectangle divided into 4 sections. Individually record responses then share responses in pairs. Ask questions to clarify understanding Contribute to classroom discussion, giving reasons for responses.
<p>After</p> <ul style="list-style-type: none"> Create incomplete visual representations and ask students how the illustrations can be improved e.g., add a right angle marker to an illustration of a right triangle. Discuss non-examples. Determine how to store the organizer for future reference e.g., on the back of a word wall card, in student notebooks, on a poster in the classroom. Discuss additional notes/pictures that can be added to the organizer. Encourage students to collect pictures from print media to further illustrate the term. 	<ul style="list-style-type: none"> Contribute to classroom discussion. Critique incomplete visual representations that the teacher creates. Suggest non-examples and give reasons for responses. Decide if a personal copy is needed and whether additional notes/pictures need to be included. Look for additional visual support.

Notes

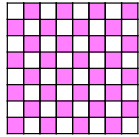
Verbal and Visual Word Association - Samples

Vocabulary Term	Visual Representation
Definition in student's words	Personal Association

octagon	
A polygon with 8 sides	 <p>A stop sign is a <i>regular</i> octagon.</p>

Observations from Example 1:

This completed organizer clearly indicates that the student understands that the term octagon encompasses more than just regular octagons, i.e., those shaped like a stop sign with sides of the same length and interior angles with the same measure.

square	
<ul style="list-style-type: none"> ○ a rectangle with equal sides or ○ a rhombus with equal angles or ○ a regular quadrilateral or ○ a quadrilateral that has equal sides and angles 	 <p>- a checkerboard or the little squares in a checkerboard</p>

Observations from Example 2:

Encourage students to draw figures in less common orientations. Notice how this square is "tilted". Challenge students to modify an incorrect or incomplete definition by giving a non-example of the vocabulary term that will fit the student's definition. For example, if a student defined a square as a parallelogram with sides of equal length, then draw a rhombus and ask the student whether it fits the definition and if it is indeed a square.

More Tips and Comments:

- Consider students' developmental stage of understanding when assessing student definitions of mathematical terms.
- Figures like rectangles can be difficult to define since various combinations of their properties can uniquely define the figure (see example above).



Student/Teacher Resource

Verbal and Visual Word Association - Template

- Print template on card stock. Complete as a whole class.
- Print the vocabulary word on the reverse side then place the card on a word wall for future reference.

