Content Area Project

The Importance of Vocabulary: Content Area Instruction and Effective Strategies

As the standards movement continues to develop, time-coast issues and pressures increasingly stress educators and their administrators. As more state and district required tests are created and administered, curriculum instruction tends to be constricted. For teachers and students feel the pressure to score high. This drastic increase in testing, whether good or bad, has resulted in a close scrutiny of the reading skills developed by American students. Essentially, professionals in the field of education have come to the conclusion that “students must be able to read closely in order to learn well” (Phillips, Foote & Laurie, 2008). Therefore, a large portion of literacy instruction must be the development of content vocabulary. The literature is clear about the strong relationship between content vocabulary and comprehension of content specific material. However, a number of U.S. teachers fail to stimulate and engage students in deep and meaningful vocabulary instruction (Phillips, Foote & Laurie, 2008). Consequently, the purpose of this paper is to describe the importance of content vocabulary instruction and the effective strategies that can be used in doing so.

After observing student teachers, novice teachers, and veterans, researchers have noticed that a number of teachers, regardless of content area, fail to facilitate the learning of important content vocabulary. Unfortunately, several teachers simply resort to the copying of definitions. When asked why this is their chosen method, nearly all reply that it saves time and allows for a quick progression into the “actual” material (Greenwood, 2002). What many of these teachers fail to realize is that the “actual material” cannot be fully understood without a strong foundation
in its vocabulary. Therefore, teachers must make words *mater* (Greenwood, 2002). In order to do so, there are several important implications for instruction.

First and foremost, teachers must distinguish between “target vocabulary, concepts that are introduced and explained in the text, and prerequisite vocabulary, other words and concepts that may be needed for understanding the text” (Armbruster & Nagy, 1992). They must then ensure their students understand the necessary prerequisite vocabulary prior to reading. After, teachers must clarify any significant student misconceptions about the topic, thus addressing any gaps in background knowledge. Each of the above must be accomplished before reading, even if it means postponing the reading (Armbruster & Nagy, 1992). In addition, even though prerequisite vocabulary and concepts need careful attention before reading, researchers have found that target vocabulary should not be explicitly taught before reading. Research has shown that while pre-teaching may enhance content memory, it undermines student motivation and ability to extract important information from the text. As previously stated, students “must learn to read closely in order to learn well” (Phillips, Foote & Laurie, 2008). Eventually, they must be able to do so independently. Therefore, target vocabulary should be taught during and after reading only, in order to challenge students in close reading.

Once the above educational implications have been addressed, there are several general recommendations that teachers should keep in mind during vocabulary instruction. First, it is important to recognize that simple definitions to either teach or assess vocabulary are not sufficient. Students may be able to restate a definition, yet have a superficial or minimal understanding of the concept. Methods of vocabulary instruction that have proven to go beyond simple definitions all have an underlying commonality: they focus on the relationships among concepts, and use graphic aids to assist students in understanding and remembering these
relationships (Phillips, Foote & Laurie, 2008). Regardless of the method, teachers need to remember that learning new vocabulary in content areas usually means learning entirely new concepts; and learning new concepts calls for a “deep and extensive explanation and discussion aimed at building a rich semantic network of related ideas” (Phillips, Foote & Laurie, 2008).

The next question is, how? Over the years, researchers have discovered several, specific strategies that can be used to enhance student understanding of rigorous content vocabulary. The American Foundation of Teachers notes that the best practice includes “a variety of complementary methods designed to explore relationships among words and the relationships among word structure, origin, and meaning” (Greenwood, 2002). The variety of these effective strategies may include: graphic organizers, classifying words, or possible sentences. A graphic organizer is a two-dimensional, visual representation that demonstrates the relationship among concepts. A typical graphic organizer places the target word in the center and extends to additional links or cells. The research on graphic organizers has yielded strong, positive results. They have been shown to facilitate higher order thinking, serve as retrieval cues to promote learning, and aid in the learning of technical vocabulary (Greenwood, 2002). Effective examples of graphic organizers are word maps and the Frayer model. Word maps help students develop an understanding of “definition,” and make them aware of the kind of information that make up a definition and how it is organized. Word maps look to answer the following questions: What is it? What is it like? What are some examples? (Greenwood, 2002). Similar to the word map, the Frayer model looks to breakdown the meaning of words. While it was created to analyze and test student concept attainment, today, it is often used as a word categorization activity in which students identify concepts by their components such as: relevant and irrelevant attributes, examples and non-examples, and so forth (Armbruster & Nagy, 1992).
In addition to graphic organizers, the classification of words is yet another highly effective technique. Having students group or classify words according to specific properties builds connections for students. One example of a classification strategy is List, Group, Label. In List, Group, Label, students have the opportunity to think about, converse, classify, and label words related to a central topic. They brainstorm words related to a given word, then work with their fellow peers to share and combine words into sorted categories, and finally, label each category appropriately (Armbruster & Nagy, 1992). Lastly, Possible Sentences is yet another efficient and creative way to teach content vocabulary. Unlike the previous two strategies, students predict the content of an upcoming reading by examining the target vocabulary words (Stahl & Kapinus, 1991). First, the teacher chooses several words that students need to know in order to comprehend the text. Second, using these words, students write sentences that they believe may be found in the text. After, students keep track of their possible sentences and share their ideas as a whole class. Finally, they use their possible sentences as support while reading the text and mark each sentence true, false, or unknown (Stahl & Kapinus, 1991). Essentially, Possible Sentences facilitates peer interaction and collaboration, active information processing of content specific words, and better retention of the material.

In conclusion, as teachers, we must go beyond assisting students in learning new content vocabulary. We must make words matter to students, and model how they can derive the meaning of words from a text. Such can be done by incorporating a wide variety of highly effective vocabulary strategies such as graphic organizers, List, Group, Label, and Possible Sentences. By repeatedly teaching content specific vocabulary and strategies to analyze and deeply understand this vocabulary, we can provide students with the opportunity to develop into independent, close readers.
References


*The following are two sequential science lessons for the unit of “habitats.” Within the lessons, there are explicit activities that teach content specific vocabulary. The activities are written in red.

**Unit:** Habitats of the World

**Grade:** 1

**Unit Summary:** This unit introduces first grade students to the concept of habitats. By participating in this unit, the students will be able to identify habitats as “an environment that is specifically suited for certain living things.” This unit will cover the five major habitats, including the forest, meadow/prairie, rainforest, desert, and water. This unit consists of five lessons that go into each habitat in depth, covering the habitat’s climate, geography, location, plants, and animals. In completing this unit, the students will gain an awareness of the characteristics and structure of living things and how they interact with their environment. They will further develop an understanding of the various life systems each habitat supports. Ultimately, this unit provides a strong basis for future learning in this scientific area.

**Prerequisites:** Prior to the below lessons, the students will have participated in an introductory lesson on homes and habitats. Therefore, they will have an understanding of what a habitat is and what it typically contains.

**Essential Question:** What is a habitat?

**Unit Questions:**
1. What type of plants and animals live in the desert?
2. What are the characteristics of a forest habitat?
3. What type of plants and animals does a rainforest support?
4. What is contained within a meadow?
5. What are the different water habitats and where are they located?

**Student Objectives/Learning Outcomes:** To successfully complete the unit, the student will...
1. Understand that living things live in habitats--environments to which they are particularly suited.
2. Identify the basic needs of animals and plants.
3. Define the characteristics of each specific habitat.
4. Classify the animals and plants that live in each specific habitat.

**Assessment Plan:** I will use the below activities to assess student understanding, essentially whether or not each student has met the specified objectives. I will collect and evaluate the assessments to drive my instruction. By analyzing my students’ completed work, I will
determine what content material has been mastered, what needs to be review, or what needs to be entirely re-taught.

- Observed Activities
- Individual and Small Group Assignments
- Experiment Logs
- Reflective Journals
- Art Projects

*See detailed explanations in individual lesson plans.

**Reflection:** Since I have not used either of these lessons in a classroom yet, I could not reflect on their success. However, I decided to reflect on how I could differentiate them based on a diverse student population.

1. **Differentiation Strategies:**

2. **ELL:** All materials in both English and ELL student’s native language will be provided. The Science Word Wall and classroom objects will be labeled in both English and ELL student’s native language. Group work and peer tutors to further student’s social interaction and understanding of science will also be provided. The content, process, and product of the lessons will be adapted to fit the developmental level and needs of all students.

3. **Visual Impairment:** For those visually impaired, a copy of any projected materials or resources will be provided. Enlarged print and bright colors will be used. These students will be placed in the front of the room. For those with severe visual impairments, a copy of each material in Braille will be provided to allow them to create their projects in Braille. Auditory and tactile resources will be available to further their understanding of the topic.

4. **Auditory Impairment:** Visual representations of materials, such as graphic organizers, PowerPoints, etc will be included. A microphone may be needed. These students will be placed in front of the class.

5. **Physically Disabled:** For students with a fine motor or severe physical disability, appropriate assistive technology will be available. Such technology may include response boards or software programs such as Type to Text. Partnering and small group work will also be permitted to promote social interaction and understanding of the topic.

6. **Learning Disabled:** Adjusting the content, process, or product of any lesson will meet the needs of these students. Incorporating and addressing student preferred learning style will be considered in each lesson.

7. Appropriate modification of any lesson, assignment, activity, or classroom environment will meet the needs of those with an IEP or 504 plan.

8. Lastly, for those that are advanced, creative and challenging extension activities will be created. These may include writing activities that challenge students to use the newly learned content vocabulary or webquests to incorporate additional technology.
Lesson#1: All Dried Up (Desert Habitat)

Overview

The students will explore the desert habitat and its various components through literature and multiple hands-on, minds-on small group activities. Lastly, the students will demonstrate their understanding of the desert habitat by completing the “Painted Desert” activity.

Suggested time allowance: 40 minutes

Standards

- NYS Science Standards
  - Standard 1: Analysis, Inquiry, and Design
    - Key Idea 2: Beyond the use of reasoning and consensus, scientific inquiry involves the testing of proposed explanations involving the use of conventional techniques and procedures and usually requiring considerable ingenuity.
  - Standard 4: The Physical Setting
    - Describe chemical and physical changes, including changes in states of matter.
      - Major Understandings:
        - 3.2a Matter exists in three states: solid, liquid, gas.
        - 3.2b Temperature can affect the state of matter of a substance.
        - 3.2c Changes in the properties or materials of objects can be observed and described.
  - Standard 4: The Living Environment
    - Describe the characteristics of and variations between living and nonliving things.
      - Major Understandings:
        - 1.1a Animals need air, water, and food in order to live and thrive.
        - 1.1b Plants require air, water, nutrients, and light in order to live and thrive.
    - Individual organisms and species change over time.
      - Major understandings:
        - 3.1b Each plant has different structures that serve different functions in growth, survival, and reproduction.
        - 3.1c In order to survive in their environment, plants and animals must be adapted to that environment.

- NSTA Standard
  - Standard 3: Learning Environments
    - 3b Develop lesson plans that include active inquiry lessons where students collect and interpret data using applicable science-specific technology in
order to develop concepts, understand scientific processes, relationships and natural patterns from empirical experiences. These plans provide for equitable achievement of science literacy for all students.

- **ACEI Standard**
  - Instruction
    - 3.4 Active Engagement in Learning – Candidates use their knowledge and understanding of individual and group motivation and behavior among students at the K-6 level to foster active engagement in learning, self motivation, and positive social interaction and to create supportive learning environments.

- **Common Core Standards**
  - Reading Standards for Literature
    - 1. Ask and answer questions about key details in a text.
  - Speaking and Listening Standards
    - 1. Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

**Essential Unit Question**

What is a Habitat?

**Resources/Materials For This Lesson**

- The book, *Welcome to the Sea of Sand* by Jane Yolen
- KWL chart
- Sponges
- Buckets
- Water
- Science Journals
- The book, *Deserts*, by O’Mara
- Pie Pans
- Observation Logs
- Watering Can
- Construction Paper
- Tissue Paper
- Magazines
- Scissors
- Glue
- Markers
Activities/Procedures

- To begin, read aloud *Welcome to the Sea of Sand* by Jane Yolen. Ask the students: “Can someone tell me what the story was about, or provide a detail from the story?”
  - Look for the following responses: desert, sand, heat, animals.
- Explain to the students that today they are going to learn about the desert habitat, which was just described in the story.
  - Explain to the students that the desert habitat is one of five major habitats in the world, and the first we are going to explore.
- Ask the students “What do you already know about deserts?”
  - Provide each student with a “Desert Habitat” KWL chart and have the students fill out the “Know” section during the discussion.
  - Look for the following responses: weather, temperature, rainfall, landscape, etc.
  - Collaboratively fill in the “Want” section of the “Desert Habitat” KWL chart.
- Explain to the students that one of the desert’s most notorious characteristics is its consistent dryness. Tell the students that they are now going to go outside to participate in an activity to discover why it is so dry. (Be sure it is a sunny day).
  - To model, take a sponge, dip it in water, and wipe a circle on the pavement. Watch with the students as the water begins to disappear. Ask the students: “What happened to the water?”
  - Look for the following response: disappeared.
  - Explain to the students that the water evaporated and become vapor.”
    - Ask the students, “Do any of you know the true definition of evaporation or vapor? Or can any of you give an example? Take a moment and think to yourselves quietly.”
    - Have the students create at least three possible sentences for the two new vocabulary words.
      - Model how to create a possible sentence, but do not give away the true definitions in doing so.
    - After, hand out a grade appropriate reading selection on evaporation. You may want to differentiate the reading selections based on students’ reading level. However, make sure the overall content remains the same.
    - Have the students popcorn read the selection as a whole class (or in small groups if the selection is differentiated).
    - After reading, have the students think-pair-share and evaluate whether or not their possible sentences were correct.
    - Afterwards, come together as a whole class to share possible sentences and accurately define the two words.
    - Finally, write the words and their definitions on the science word wall. Provide a visual example of each.
    - Explain to the students more clearly that the water changed from the water we saw to an invisible gas and went into the air. Ask the students: “What do you think helped the water disappear?”
      - Look for the following response: the Sun.
    - Explain to the students, in the desert the sun is strong and quickly evaporates any rainfall the desert receives.
Tell the students they are now going to experiment with evaporation.

- Divide the class in small groups.
- Provide each group a sponge.
- Have the students dip their sponges into a bucket of water and draw pictures on the pavement.
  - Tell the students to draw one picture completely in the sun, one partially in the shade, and one entirely in the shade.
  - Tell the students to note which picture evaporated the fastest? The slowest? Why did this happen?
    - Have the students record their observations in their science journals.
- Return to the classroom and conduct a whole class discussion regarding the activity.
- Ask the students to fill in the “Learn” section of their “Desert Habitat” KWL chart.

Explain to the students that since it is so dry within the desert only certain plants and animals can live there.

- Ask the students: “What are some things plants and animals need to survive?”
  - Look for the following responses: water, food, shelter.
- Read aloud the “Plant and Animal” section of the book, Deserts, by O’Mara. Ask students volunteers to read.
- Review how the plants and animals stay alive by adapting to the desert’s harsh environment.
- Explain to the students that they will now participate in an activity to see how plants can survive in the desert.
  - Divide the students into pairs.
  - Provide each student pair with a pie pan, a sponge, and an “Observation Log.”
  - Tell the students to observe the sponge and write down what they see in the “Before” section of their log. Tell the students they may also draw a picture.
  - Following, walk around the classroom and use a watering can to drop water (representing rain) on each pair’s sponge.
  - Tell the students to record what happened in the “After” section of their log. They may again draw a picture.
  - Explain to the students that this is how plants, like cacti, survive in the desert. They absorb the water so they can survive with little to no rainfall for periods of time.
  - Write the word “cacti” on the science word wall.

- Tell the students to complete the “Learn” section of their “Desert Habitat” KWL chart.
- Tell the students they will now compile everything they have learned about the desert and its inhabitants by creating their own “Painted Desert.”
  - Provide the students with tissue paper.
  - Have the students rip the tissue paper and overlay it on a piece of construction paper to create the desert sky, sand dunes, mountains, the sun, cacti, etc.
- Have the students include the accurate plant and animal life found in the desert by cutting and pasting internet print outs, magazines pictures, etc.

**Evaluation/Assessment**

- Observation of students during the water evaporation activity and during the review session at the conclusion of the activity.
- Collection of the experiment logs for evaluation and to provide feedback.
- Observation and evaluation of students in their cooperative groups.
- Collection and evaluation of individual “Painted Desert.”

**Vocabulary**

- Evaporate
- Water vapor
- Cacti
Lesson#2: The Gift of Trees (Forest Habitat)

Overview

The students will explore the forest habitat and its various components through literature and multiple hands-on, minds-on activities. Lastly, the students will demonstrate their understanding of the desert habitat by completing the “Raccoon Mask” activity and writing piece.

Suggested time allowance: 40 minutes

Standards

- NYS Science Standards
  - Standard 4: The Living Environment
    - Describe the characteristics of and variations between living and nonliving things.
    - Major Understandings:
      - 1.1a Animals need air, water, and food in order to live and thrive.
      - 1.1b Plants require air, water, nutrients, and light in order to live and thrive.
    - Individual organisms and species change over time.
    - Major understandings:
      - 3.1b Each plant has different structures that serve different functions in growth, survival, and reproduction.
      - 3.1c In order to survive in their environment, plants and animals must be adapted to that environment.
  - Standard 6: Interconnectedness: Common Themes
    - Key Idea 1: Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions, observe and describe interactions among components of simple systems, and identify common things that can be considered to be systems (e.g., a plant, a transportation system, human beings).
- NSTA Standard
  - Standard 5: Impact on Student Learning
    - 5c Engage students in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner.
- ACEI Standard
  - Instruction
    - 3.5 Communication to Foster Collaboration – Candidates use their knowledge and understanding of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the elementary classroom.
- Common Core Standards
  - Reading Standards for Literature
1. Ask and answer questions about key details in a text.
   o Speaking and Listening Standards
      • 1. Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

Essential Unit Question

What is a Habitat?

Resources/Materials For This Lesson

- Poster Board
- The book, Ancient Forests by Siy
- “Forest Layers” graphic organizer
- Pencil
- Crayons
- Image of Forest Layers
- Image of Deciduous Tree
- Image of Coniferous Tree
- “Tree T-Chart”
- The book, Tree Trunk Traffic by Lavies
- Raccoon Mask PDF
- Scissors
- String

Activities/Procedures

- To begin, explain to the students that they will now be studying the forest habitat. Remind them, that like the desert habitat, specific plants and animals live in the forest.
- Ask the students:
  o “Has anyone ever been to a forest?"
  o “What did you see?”
  o “Does anyone know something about a forest habitat?”
- Chart student responses on poster board entitled ‘The Forest.”
- Explain to the students that there is more than one type of forest. The types of forests depend on the amount of rainfall and different types of trees.
- Direct a shared reading with the book, Ancient Forests by Siy.
- After reading, discuss the different layers of the forest.
Pass out the graphic organizer titled “Forest Layers” (see attached) for the students to fill out during the discussion.

Project an enlarged version of the graphic organizer in the front of the room. Fill it in as the students provide answers.

Display images to provide a visual of each layer.

Explain to the students that the top layer is called the **canopy**.
- In pairs, have students extract key facts about the “canopy” layer from the text.
- Have volunteer students provide information.
- Record the information onto the large graphic organizer. Have the students record the same information onto their personal graphic organizer.
- Look for *tall trees and their branches spread to form this layer.*
- Explain that the trees are one of two types: deciduous and coniferous.
  - Tell the students that they will learn about the difference between the two types of trees later in the lesson.

Explain that the next layer is called the **understory**.
- Do the above.
- Look for *this layer is made up of shorter trees.*

Explain that the third layer is the **shrub** layer.
- Do the above.
- Look for *this layer is made up of sassafras and sumac.*

Explain that the fourth layer is the **herb** layer.
- Do the above.
- Look for *this is where ferns, grasses, and wildflowers grow.*

Explain that the last is the **floor**.
- Do the above.
- Look for *the floor is covered in mosses, leaves, and twigs.*

Tell students to hold on to their filled in “Forest Layers” graphic organizer.

Ask the students for comments, questions, or concerns.

Next, explain to the students that **deciduous** and **coniferous** trees are the two types of trees that grow in the forest.

Project the following images:

*Deciduous Tree*
Coniferous Tree

- Have the students work in pairs to examine the pictures.
  - Provide each student with a “Tree T-Chart” labeled deciduous and coniferous.
    - Have the students discuss and record their observations of each picture into the appropriate section of the T-Chart.
  - While the students are working, pass around examples of deciduous and coniferous leaves.
    - Have the students discuss the different leaves and record their observations into the appropriate section of the T-Chart.
- Once the students are done recording their observations, explain the difference between deciduous and coniferous trees.
  - Explain that coniferous trees have needle-like leaves that are kept year round.
    - Examples: Pine, cedars, yew, fir, redwood, juniper, spruce.
  - Explain that deciduous trees have leaves that change colors and fall off during the fall.
    - Examples: maples, oaks, birches, aspens, elms.
  - Have the students write some examples of the deciduous and coniferous trees into their T-Chart.
- Explain to the students that they are now going to learn about the types of animals that live in the forest habitat. Ask the students: “Based on the above pictures, what types of animals do you think live in the forest?”
  - Chart student responses.
  - Look for the following: raccoons, squirrels, birds, mice, deer.
- Explain to the students that forests make good homes because their trees and bushes provide the animals with food and shelter.
- Direct an echo reading of the book, Tree Trunk Traffic by Lavies.
  - Ask the students: “What two animals did we read about in the book?”
    - Look for the following response: squirrels and raccoons.
- Ask the students: “Why did the book say they live in the forest habitat?”
  - Look for the following response: it provides shelter.
- Differentiate between a squirrel and a raccoon.
  - Squirrels – their homes are in trees, usually deep in the trunk. They eat nuts, seeds, fruit, mushrooms, and sometimes bird eggs.
  - Raccoons – their homes are made from hollow logs or trees. They eat fish, fruit, small animals, and birds’ eggs. They use their front paws like hands to eat and dip their food into water so they can chew it better.
- Return to the students’ colored and labeled “Forest Layers” worksheet.
  - Have the students draw, or glue a picture, of one animal per forest layer.
  - They animals must be labeled and in the appropriate layer.
- As a wrap up, explain to the students that they are now going to create a raccoon mask.
  - Have the students first color their mask.
  - Have them then cut out the eyeholes. Be sure to use safety scissors and assist those students that need help!
  - Using string: With a pencil, punch out the two small circles with Xs. Pull a piece of string through one of the holes and tie a knot in front. Pull the other piece of string through the other X, and tie a knot in front. Now you can tie the mask around your head!
  - Using a popsicle stick: Flip over your mask. Tape or glue the top of the stick around the nose area so that most of the stick hangs down below the mask. Now you can hold the mask in front of your face!
- Lastly, the students are to write one to two paragraphs about the day in the life of _________ the raccoon.
  - Have the students name their raccoon and be both descriptive and accurate in their writing.
  - Ask student volunteers to share their story.

**Evaluation/Assessment**

- Collection and evaluation of the “Forest Layers” worksheet.
- Collection and evaluation of the “Raccoon Story”.

**Vocabulary**

- Canopy
- Understory
- Shrub
- Herb
- Floor
- Deciduous Tree
- Coniferous Tree
Forest Layers Graphic Organizer

- Canopy
- Understory
- Shrub
- Herb
- Floor