

Theme:

STANDARD FOUR: CREATING A LITERATE ENVIRONMENT

Description: Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, use of instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments.

Type of evidence: The artifact presented as evidence to support this theme is a Content Area Literacy Project involving a vocabulary comprehension activity based on a concept map that has been adapted to supplement a seventh grade science class.

Master's Course it connects with:

Reading in the Content Area
ELED 501
Dr. Ezra Stieglitz

Standards it connects with:

2.1 Support classroom teachers and paraprofessionals in their use of instructional grouping options. They help teachers select appropriate options. They demonstrate the options and explain the evidence-based rationale for changing configurations to best meet the needs of all students.

2.2 Support classroom teachers and paraprofessionals in the use of a wide range of instructional practices, approaches, and methods including technology-based practices. They help teachers select appropriate options and explain the evidence-base for selecting practices to best meet the needs of all students. They demonstrate the options in their own teaching and in demonstration teaching.

2.3 Support classroom teachers and paraprofessionals in the use of a wide range of curriculum materials. They help teachers select appropriate options and explain the evidence base for selecting practices to best need the needs of all students. They demonstrate the options in their own teaching and in demonstration teaching.

4.1 Assist the classroom teacher and paraprofessional in selecting materials that match the reading levels, interests, and cultural and linguistic background of students.

4.2 Assist the classroom teacher in selecting books, technology-based information and nonprint materials representing multiple levels, broad interests, and cultural and linguistic backgrounds.

4.3 Demonstrate and model reading and writing for real purposes in daily interactions with students and educational professionals. Assist teachers and paraprofessionals to model reading and writing as valued lifelong activities.

4.4 Use methods to effectively revise instructional plans to motivate all students. They assist classroom teachers in designing programs that will intrinsically and extrinsically motivate students. They demonstrate those techniques and they can articulate the research base that grounds their practice.

Rationale:

This piece of evidence belongs in a reading specialist's portfolio because it creates a literate environment that fosters reading and writing by integrating foundational knowledge, use of instructional practices, approaches and methods, curriculum materials, and appropriate use of assessments meeting professional standards **4.1, 4.2, 4.3, and 4.4**. This artifact demonstrates strategies for improving content area vocabulary meeting standards **4.1, 4.2, 4.3, 2.2, and 2.3**. Strategies that are discussed in the artifact include concept maps, word sorts, 5-3-1, highlighting text, as well as various graphic organizers.

This artifact also includes how new technologies can be utilized to enhance instruction in reading and writing meeting standards **2.2 and 4.2**. In this unit students use an interactive website as an instructional resource. This site is helpful because students were able to test their knowledge and get instant feedback.

Throughout the unit, articles were read to the students using a read/think aloud strategy in order to model what good readers do when they read which supports standard **4.3**.

This unit on concept maps also discussed ways of differentiating the assignments to meet the needs, interests, and capabilities of a diverse group of students meeting standards **2.1, 2.2, 2.3, 4.1, 4.4**. As mentioned in the description of students, the literacy achievement levels ranged from 4.0 to 7.0 and came from a variety of backgrounds. Students were grouped heterogeneously when completing a group activity. Careful consideration was taken when doing partner activities, making sure each partner had different strengths and weaknesses to maximize learning.

The concept map was the final activity, a way to see if students really grasped the unit of study. Students work individually first, then in a group to share their ideas, supporting standards **2.1, and 4.4**.

CONTENT LITERACY PROJECT

Reading in the Content Areas

Concept Maps

Linda Tarantelli

ELED 501

November 14, 2005

BACKGROUND INFORMATION

I. Content Domain, Area, & Topic

Science, Life Science, Diversity of Life

II. Length of Instructional Period

16 weeks

III. Description of Units/Topics Covered during this Instructional Period

The big ideas I want students to take with them are:

- Life happens in cells.
- Cells are aquatic, even in terrestrial organisms.
- Cells all have the same basic requirements for survival.
- Life is diverse.
- Most life is single-celled.
- All organisms are adapted to live where they live.

Unit One: What is Life?

Students think about characteristics that are common to all living organisms to develop an operational definition of life that will be used throughout the unit.

Unit Two: Kingdoms of Life

Students are introduced to the great diversity of microorganisms found all around us- bacteria and fungi. They are introduced to the system of five kingdoms of living organisms. They are also introduced to the classification system that scientist use to classify all organisms.

Unit Three: Introduction to the Microscope

Students develop their skills with an important piece of scientific technology. They use the microscope to observe and study microorganisms.

Unit Four: Microscopic Life

Students discover cells and begin to understand their importance as the basic units of life. Elodea and paramecia are studied in depth, and students search for other microorganisms in pond water.

Unit Five: The Cell

Students become familiar with biological structures and functions at different levels of organization: cells, organs, tissues, organ systems, and whole organisms.

Unit Six: Seeds of Life

Students recognize that seeds are living organisms in a dormant state. They observe and describe the first development stages of a plant.

Unit Seven: Transpiration

Students conduct investigations to understand how the vascular system transports water through a plant and how leaves regulate the rate of water flow through a plant.

Unit Eight: Plant Reproduction

Students investigate the reproductive systems in flowers to understand the origin of seeds. They explore plant adaptations for seed dispersal.

Unit Nine: Roaches

Students design and conduct an experiment to determine environmental preferences of an insect-the Madagascar hissing cockroach. They observe structures and behaviors of a multicellular organism.

IV Grade Placement of Students

This unit will be presented to a whole class of heterogeneously grouped sixth graders.

V Grade/Reading Level of Activities Planned for these Students

All activities that are planned for this group of students will be appropriate for the sixth grade level with modifications and accommodations where needed.

VI Description of Class or Group

A. Number of Students

There are 24 students in this class.

B. Description of Students

The class is made up of regular education students as well as students that have an IEP but are mainstreamed for science. The literacy achievement levels range from 4.0 to 7.0. Students come from a variety of ethnic backgrounds. About half of these students come from low socioeconomic backgrounds, many with only one parent at home.

C. Physical Setting of the Room

The majority of the lessons will take place in my classroom with the exception of a couple which will take place in the schoolyard where we will be collecting specimens. The room is made up of tables with two students sitting at each one. At times the students will be working in groups of two which makes these tables perfect. At other times they will be working in groups of three or four. These tables can be reorganized to fit the task at hand with very little effort. On the left side of the room is where students will find supplies needed for lab activities. In the back of the room they will find rulers, tape, highlighters, colored pencils...etc

On the right side of the room students will find their scientist notebooks which they will use to record all of their investigations. My desk is located in the front of the room as well as my demonstration table.

Before the Activity:

So far, students have completed several investigations to determine whether something was living or nonliving. First, with a partner, students categorized pictures of objects and organisms into living and nonliving groups. Then, as a class we talked about where each card was placed and students were asked to explain why they chose living or nonliving for that item. We continued by debriefing all the cards, while at the same time generating a list of characteristics for living things. The list that came up in discussion were that all living organisms grow, consume nutrients, exchange gases, respond to the environment, reproduce, eliminate waste, and are composed of cells.

Next, students placed five unidentified materials (sand, yeast, polyacrylate crystals, radish seeds, and brine shrimp eggs) in different environments and observed what happened after a day. They determined if each material was living and recorded the evidence that supported their determinations. At this point students thought about the characteristics that were common to all living organisms and developed a definition of life. Definitions for nonliving, dead and dormant were also given at this time.

We also read an article from the Diversity of ^{life} resource book. I made up a graphic organizer ahead of time and had the students fill it in as we read the article. I read the article because I wanted to model what good readers do when they read. I also wanted to stop in the appropriate places and have students fill in their graphic organizers. At the end of the lesson I asked my students if they preferred a graphic

*good
reader*

organizer to answering the questions at the end of the article and they said they liked the graphic organizer much better. They said that it helped them to see how everything fit together. I used the questions to make the graphic organizer. (See **Appendix B** for handouts on these lessons.)

Now that students know what an organism is we wonder about how scientist classify them. (Classification is the arrangement of objects, ideas, or information into groups where the members of each group have one or more characteristics in common.)

Students do a basic lab on classification using shapes. Students come to the conclusion that scientists need to have a set classification system for all organisms, otherwise it would be too confusing to locate them. Classification makes things easier to find, identify, and study. (They determined this after doing the lab and everyone classified things differently.) (See **Appendix B**)

Next, students read several articles on classification. One article asked students to decide whether chimps should be classified in the same genus with humans because of all the similarities. Students could say “yes” or “no” but they had to back up their answer with evidence from the text. The other article was similar but it talked about classifying the Giant panda bear. Students were asked questions where they had to back their answers up with evidence from the text.

Finally, students go to the library to reinforce what they learned about classification by working on an interactive site. Some of the information they must write on their

worksheet, while other information they do right on the computer. The students really enjoyed this activity. (See **Appendix A**) ✓

Preparation for Activity:

The students have already been introduced to concept maps several times. It was introduced through demonstration by the teacher first, and then students created concept maps in small groups. The goal today is to have students create their own maps. ✓

During

The lesson will begin by reading an article called "Kingdoms of Life" found in the **Diversity of Life resource book**. We will do something called a 5-3-1. How this works is that as the students read the article, they highlight words that they think are important. After they finish reading, they will write down the five words that they feel are the most important and write a reason why they think so. After everyone is finished, they will pair up with another student and discuss the words they chose and why. Together, they will decide on the three most important words and they will write them down. Next, they will get together as a group of four and choose the one word that they think is the most important. We will then get together as a whole class to discuss what words we came up with. From these lists we will come up with a class list of vocabulary words. Students like doing this activity because it gives them ownership. (See **Appendix C**)

Very good technique

The next day I will introduce a graphic organizer on the five kingdoms of life. Using the article from yesterday, I will fill it in on the overhead, and have students fill in theirs. (See **Appendix C** for a copy of this graphic organizer.)

Now that they have all this information, students are now ready to fill in their concept maps. I will have them count off by fives. All the ones will make a concept map for the animal kingdom; the twos will make a concept map of the plant kingdom and so forth. When they are finished they will get together with other students who had the same kingdom as they did to share their answers. (There can be more than one right answer.) When everyone is done sharing, one member from each group will share their concept map with the class. We will discuss it as a class and if we all agree that the map works, students will copy it into their scientist notebooks. We will continue the process until all groups have shared.

*Clever idea
for a creative
writing
activity*

As a follow up activity, students will pretend that they are an organism other than a human. They must describe the environment and the organisms around them. What do they see? How do they feel? What is a typical day or night for you like? First they must gather information so that they can write a true to life, detailed story. Information can be gathered from prior knowledge, Internet, or books.

The next topic of study would be cells. Students can look on their concept maps to see that all living things are made of cells. Why are they so important?

Plan for Vocabulary Activity

I. Title of Activity

Word/Concept Map

II. Sources

Vacca & Vacca, p. 121-124

Class Notes, 10/24/05

Packet of Materials, p. 44, 45

III. Brief Description of Activity

A concept map is a graphic organizer that gives you conceptual information and helps you define the word. Conceptual information is organized in terms of three relationships: the general class or category in which the concept belongs, the characteristics of the concept and examples of the concept.

IV. Topic of Instruction

Students will apply what they have learned about organisms and draw a concept map using one of the five kingdoms of life as their center word. So far in the unit, students have learned the eight characteristics of all living things. They can distinguish between something that is living, nonliving, dead, or dormant. They have also been introduced to the five kingdoms of life and have seen examples of each. In this lesson they will apply what they know using one of the five kingdoms as their concept.

V. Content Concepts

The major emphasis for this lesson will be a review of the content concepts listed below.

- The eight characteristics of all living organisms
- Distinguish between something that is living, nonliving, dead, or dormant
- Distinguish between the five kingdoms of living organisms

This vocabulary activity will help students show that they have mastered the above concepts by demonstrating their understanding of the relationships between the concepts listed above. This activity will help students understand how everything we have been talking about so far fits together.

VI. Materials

Main material used for activity:

(2003). *Diversity of Life Resources*. Nashua: Delta Education

Other material used:

(2003). *Diversity of Life*. Computer Software. Nashua: Delta Education

(2003). *Life Science Daybook*. Wilmington: Great Source Education Group, 86-89

(2002). *Sciencesaurus: A Student Handbook*. Wilmington: Great Source Education Group, 150-160

Weir, Kirsten. (October 2003). Chimps “R” Us. *Current Science*, 4-5

VII. Related Website

- <http://sciencespot.net>
- instructional resource
- This site was helpful because students were able to test their knowledge of classification and get instant feedback.
- For a copy of the activity with relevant screens see **Appendix A**.

VIII. Plan for Using this Activity

IX. Copy of Material Related to Activity Described in VIII

Please see **Appendix C** for copies of the following material

- Concept map template
- Concept map answer keys (answers may vary)
- Kingdoms graphic organizer
- Article on **Kingdoms of Life**

X. Results of Field Testing

I began the lesson by again introducing what a concept map was. I put a transparency on the overhead and went over the three basic parts, showing the students where the concept should be written. I used a simple example of a shark since we will be visiting the IMAX theatre to see Sharks 3D next week. Everyone seemed to understand so I introduced the lesson, telling the students that they would be required to create their own concept map at the end of the lesson.

I introduced the lesson by telling the students we would be doing a 5-3-1. They were eager to start. Most of my class enjoys this activity because they basically get to choose which words we will be studying. Students were given the articles and were asked to complete the reading assignment. As they read they highlighted words that they thought were important. After they finished reading the article, they went back to the article to see which words they highlighted. They had to narrow it down to five words and write them on their graphic organizer. They also were required to write why they thought the word was important. After everyone finished, students got together with a partner and discussed the words they chose. They then had to narrow

down their words to three words that they both agreed upon. Next, they got together with a group of four and chose one word that they thought was the most important word. When everyone was finished, each group shared their words along with their reason for choosing it. We wrote all their words on a poster board. Some groups chose the same words and their reason was usually something like “because it was in bold”. When we were finished, we came up with five vocabulary words. As I said before, my students enjoy this activity because it gives them ownership of the words. The words they came up with were Animal, Plant, Monera, Protista, and Fungi.

The next day I introduced the graphic organizer on the five kingdoms of life. Using the article that we read yesterday, we filled in the graphic organizer. I put a transparency on the overhead and as we pulled information from the text, we placed it in the appropriate area. The students copied this information down as we went along.

At this point I told them to count off by fives. I then assigned them a kingdom based on their number. I told them that they would be filling in their concept map of their assigned kingdom based on all the information we have gathered. I told them that they could refer to their scientist notebooks to refresh their memory. When they finished, I had them get together with other students that had the same kingdom as they had to compare their answers. (Keep in mind that there is no one right answer.)

I noticed that some students were having difficulty creating their concept maps. Students that had the animal and plant kingdoms didn't have much difficulty.

Students that had the Protist , Monera, and Fungi kingdoms had much more difficulty and needed some assistance. Next time I think I either have to go over these kingdoms in more detail or I could purposely assign them to my able students. I would have to make sure that they picked these kingdoms. I could also have had them work with a partner, where one student is more able to complete the task, but I really wanted everyone to have a chance to work alone.

When everyone finished I had one person from each share their concept map with the class. If we all agreed that it worked, the students would then copy it down in their notebooks. Where we had trouble was the kingdom, Monera because students were not that familiar with it, even after all the preparation. I used the example of e.coli. I asked the students if they knew what it was and they said that it was found in our water recently and they had to boil their water. I said “yes” that it was a bacterium that contaminated the water. I told them that bacteria come in three shapes so why don’t we use the shapes as the examples for now. They agreed and we completed the map. Next time, I might exclude this kingdom from the concept map activity since most of our work is done with the other four. I could just introduce it as one of the kingdoms but not go so far as a concept map. I don’t think they would have had trouble creating the map had they had a different concept.

I asked students how they liked this activity and they responded that they liked it because it helped them put all the information together. They thought the visual

representation of the concept helped them to understand the concept. I asked them to write definitions for the five concepts using their concept maps for homework.

I have found throughout this unit that a lot of my students are visual learners. I used to read the text with them, highlighting important points, and then ask them to do the questions for homework. Throughout this unit I have been using graphic organizers and I feel that it has increased my students' learning. I told my students that I will try to use more graphic organizers and less answering questions at the end of each assignment. Of course, they take time to create, so sometimes they will have to do the questions. Also, sometimes the questions are necessary and can't be put in graphic organizer format.

XI. Samples of Students' Work

Please see ^DAppendix ~~H~~ for student work samples of the completed activity.

RUBRIC FOR SCORING CONTENT LITERACY PROJECT
Part 1: Content Vocabulary

ELED 501

Student's Name: Linda Tarantelli Date: 11/14/05

DIRECTIONS

The following scale is used as a guide in making decisions about each item.

←-----→
Unacceptable Approaching Standard Meets Standard Above Standard Exemplary-Exceeds Standard

The criteria presented below are not of equal value.

BACKGROUND INFORMATION

Content domain and area are appropriate ←-----→ X

Clear image of classroom setting is formed as a result of reading description of students and physical setting. ←-----→ X

Overall focus of units/topics is clearly explained. ←-----→ X

PLANS FOR VOCABULARY ACTIVITIES

Vocabulary activities selected are appropriate and descriptions are clear and concise. ←-----→ X

Activities are well-designed and can be used to help students master content area concepts. ←-----→ X

Topics selected and content concepts emphasized are appropriate. ←-----→ X

Reading/listening materials used are suitable. ←-----→ X

	←-----	-----→	-----→	-----→	-----→
	Unacceptable	Approaching Standard	Meets Standard	Above Standard	Exemplary-Exceeds Standard

Website cited is described and utilized.

←----- X -----→

Presentation of information in planning section (VIII) is organized and presented in a logical order. *

←----- X -----→

Presentation of information in planning section (VIII) demonstrates that students are given opportunities to integrate their use of literacy and content concepts through reading, writing, listening, and speaking. *

←----- X -----→

Results of field-testing are discussed in detail. (optional) *

←----- X -----→

Analysis and reflection exhibited in discussion of results. (optional) *

←----- X -----→

References are made to samples of students' work in discussion of results. (optional)

←----- X -----→

BODY OF REPORT

Format followed in presenting information.

←----- X -----→

Writing style is Clear

←----- X -----→

Writing is free of errors in grammar, spelling, and mechanics.

←----- X -----→

* These are major criteria.

Comments:

Very good explanation of how you used concept maps. Students definitely seemed to benefit from this activity.

GRADE: A