

Best Practices of Technology Integration

Title: *Squiggly, Wiggly Worms*

Subject Area: Science, Language Arts, and Technology

Intended Grade Level(s): Kindergarten-Early elementary

Description:

The purpose of this lesson is to study worms and their place in our world as decomposers. The unit of study is designed so students can observe worms, generate questions about what they want to know about worms and provides an opportunity to incorporate worms throughout the curriculum. The students will work with fifth grade “science pals” to perform simple experiments and research, using web sites particularly suited for young children. Parents of both kindergarten and fifth graders will be invited to a “Worm Exhibit” at the completion of this lesson.

Narrative:

Science and nature fascinate young children. They want to know how things occur in the natural world and constantly ask questions to satisfy their curiosity. Worms are a subject with which most children have had first hand experience. They have found worms in the garden, in the play yard, on the sidewalk after a rain or used them for bait when fishing. By using this natural curiosity and familiarity with the subject, the children will expand their knowledge and learn new techniques to find information. Young children are concrete thinkers. Most of the information they have discovered has been through direct observation. This lesson begins with that background but expands it to include books, CDs, the World Wide Web, and constructing experiments to answer questions, which the children generate.

Technology rationale: Most activities that young children experience with technology is through playing computer games. By using the computer with “science pals”, the children will learn that the computer can be used as a resource, like a book without being able to touch or turn pages.

Curriculum Benchmarks:**MI.SCI.III.5.EE.1**

Identify familiar organisms as part of a food chain or food chain or food web & describe their feeding relationships within the web.

MI.SCI.III.5.EE.3

Describe the basic requirements for all living things to maintain their existence.

MI.SCI.II.1.EE.2

Show how science concepts can be interpreted through creative expression such as language arts and fine arts. (Key concepts: Poetry, expository work, painting, drawing, music, diagrams, graphs, and charts. Real world contexts: Explaining simple experiments using paintings and drawings describing natural phenomena scientifically and poetically.)

MI.ELA.3.EE.5

Employ strategies to construct meaning while reading, listening to, viewing, or creating texts. Examples include retelling, predicting, generating questions, examining picture cues, discussing with peers, using context clues, and creating mental pictures.

Detailed Timeline:

Teacher preparation: The teacher will become familiar with the web sites, resource material, and experiment procedure and background information about worms.

Young children have a short attention span. Lessons will be developed in half-hour segments, but will be expanded or decreased based on children's interest. There are no prerequisite skills for this lesson. The complete unit should require about ten days.

The teacher will meet with the fifth grade teacher, who is also studying worms in more depth, and determine procedure and times for "science pals" projects. Four half -hour sessions in a two week period will be planned.

Additional time will be needed to feed worms 2-3 times a week until they are either sent home or introduced back into the natural environment.

The end of the lesson "Parent Night Exhibit" will last about one hour.

Materials/Hardware/Software:

CD for Mac or Windows, "One Small Square Backyard", Virgin Sound and Vision.
CD for Mac or Windows, "Sammy Science House", Edmark Corp.

Classroom and library reference books

Glaser, Linda, 1992. Wonderful Worms. Connecticut: The Millbrook Press.

Appelhof, Mary 1982. Worms Eat My Garbage, Michigan: Flower Press.

REMC103668 Puzzle of the Rotting Log VH

Experiment from: College of Life Science, University of Wisconsin, Madison 1993.
Bottle Biology. Iowa: Kendall/Hunt Publishing Company.

Materials for experiment:

2 plastic 2-liter soda bottles for each team

Worms –15 red worms per team

Earthworms for viewing

(Available at <http://www.insectlore.com>)

Bedding materials (newsprint, soil, egg shells.

Brown paper bag

Worm food

Web based activities on worms

<http://www.sci.mus.mn.us/sin/tf/w/worms/worms/worms/html>

<http://www.uiuc.edu/worms/>

<http://www.yucky.com/worm/>

<http://www.nhq.nrcs.usda.gov/CCS/squirm/skworm.html>

PC OR MAC Computer

Activities/Procedures:

1. Introduce the unit by viewing Sammy's Science House or One Square Foot Backyard CDROM. Generate a list of what may be under the ground.

Use an area of the playground (1 square foot) that has earthworms or bring in a box of soil and sod with earthworms in it, for examination. Explore as a group. List what has been found. Categorize living/non living.

2. Get live earthworms from last lesson, bait shop, or biological house (see materials).

Divide students into small groups (an adult with each group). Observe an earthworm by placing on a damp paper towel. Students should wet their hands and touch the worms on different parts of its body to see how it reacts. Have them observe many sections, muscles and their thick wet skin.

Encourage the to draw pictures of worms in their science journal or dictate a group language experience story which can be illustrated by each child. These can be posted on the YUCKY WORM web site, WORLD FORUM.

- 3,4. Generate questions about worms. Teacher writes "I want to know" messages in science journal or experience chart. Meet with 5th grade science pals. As a group, discuss what methods the young children could use to have their questions answered. Research books will be available and 3 worm web sites will be accessed. Meet with partner to answer questions. 5th grade partner will write the results in their journal and allow young children to illustrate or dictate their results too. Meet as group to report results.

5. Discuss basic requirements for living things. Start with prior knowledge with questions such as, “ What do you need to live? What do pets need ? The children should then generate a list of what worms need. Use “Wonderful Worms” children’s book to find this information, if children haven’t already collected it from their research with science pals. (<http://www.urbanext.uiuc.edu.worms/> uses Herman the Worm in an interactive activity “Worm Deli” to choose what a worm likes to eat which young children can do on his or her own) Work with children to use a worm shape paper to write a story about a worm and what it likes to eat
6. View video, “REMCIO3668 Puzzle of the Rotting Log VH”. Discuss the work and results of a decomposer.
7. Use the web site www.urbanext.uiuc.edu/worms or www.nj.com/yucky with a big screen or in small groups to access information about worm composting.
8. Meet with 5th grade science pals to make bottle-composting project (directions in Bottle Biology pages 18-20 or from web sites listed.)
9. Meet with 5th grade science pals to introduce worms into the compost bottle. Draw or write information, poem or story on brown paper that is used to shield the worms from the light. Feed the worms and set up a schedule for feeding. Continue observation and feeding throughout length of school year or until students take bottles home.
10. Conclude the lesson with a review of what we have done to learn about worms and what we have learned. Record the responses and add to science journal.

Assessment/Evaluation:

The children will be observed throughout the lesson and antidotal records will be kept on their involvement, intuitive and **learning** styles.

The students of both kindergarten and fifth grade will set up a parent display of the science journals, worm stories, bottle compost projects, web sites and any other projects done in conjunction with this unit. The children will be asked to explain the projects to their parents during the “Worm Exhibit” Parent Night.

Follow-up Activities:

The teacher will add the following activities during and after the lessons when appropriate.

Sing worm songs

Measure and stretch gummi worms

Make recycled paper

Fold paper worms

Paint with rubber worms

Make “worms in dirt” recipe which uses Gummi worms and pudding

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