Freetown Lakeville Public Schools

Grade 3 Science and Technology/Engineering Unit Guide

8/20/2002

Grade 3 Science and Technology/Engineering Curriculum Guideline

Unit: Designing Investigations

Topic:

Student Learning Objectives		Textbook References, Resources and Materials
50239	Identify materials used to accomplish a design task based on a specific property, i.e. weight, strength, hardness, and flexibility.	"How to Do" video or another video on building somthing Rubric Paper/pencil
50240	Identify and explain the appropriate materials and tools (hammer, screwdriver, pliers, tape measure, screws, nails and other mechanical fasteners).	Hammer Screwdriver Pliers Tape measures Screws Nails
50243	Describe different ways in which a problem can be represented, e.g., sketches, diagrams, graphic organizers, and lists.	Sample math problems Paper/pencils Rubric

Suggested Instructional Strategies

Brainstorm different ways in which a problem can be represented.

Discuss and give examples of when these ways may be used.

Give sample math problems where pictures are necessary to solve a problem.

Assessment

Students will plan and design a fuctional object on paper,
construct it and explain why they chose the materials they used and any problems that occured during construction. Home project with attached rubric.

Unit: Electricity and Magnets

Topic:

Student Learning Objectives		Textbook References, Resources and Materials
50232	Recognize that electricity in circuits requires a complete loop through which an electrical current can pass, and that electricity can produce light, heat, and sound.	Batteries, bulbs, copperwire, paper clips, thumb tacks, wire cutters/strippers (these need to be replaced almost every year) Text Videos Filmstrips
50233	Identify and classify objects and materials that conduct electricity and objects and materials that are insulators of electricity.	Pencils, erasures, paper clips, nails, paper, cardboard, plastic spoons, yarn, copper wire, etc. batteries, bulbs, wire (materials to test above) text
50234	Explain how electromagnets can be made and give examples of how they can be used.	
50235	Recognize that magnets have poles that repel and attract each other.	batteries wire nails, paper clips compasses text
50236	Identify and classify objects and materials that a magnet will attract and objects and materials that a magnet will not attract.	bar magnets iron filings styrofoam balls needles, nails plastic containers/trays paper saran wrap video filmstrips

Suggested Instructional Strategies

Given a variety of objects the students will identify those that a magnet will attract and objects that a magnet will not attract.

Have students find objects around the classroom that the magnet will attract and list those objects.

Have students draw a conclusion about what objects a magnet will or will not attract.

Read text and do Investigative Review.

Assessment

Paper and pencil text.

Assess list of objects the students
find in the classroom that a magnet will attract.

Projects of uses of magnets in the home. ex: posters, reports, collages, etc.

Unit: Life Cycles

Topic:

Student Learning Objectives	Textbook References, Resources and Materials
50205 Recognize that soil retains water and supports the growth of plants.	Text Gravel Sand Soil Plastic containers/trays Measuring cups, etc. Brunie,David.Eyewitness Books:Plants
50218 Recognize that plants and animals go through predictable life cycles that include birth, growth, development, reproduction, and death.	Eggs, magnifying glass, cups Sequence cards Tadpole eggs Tank, net Seeds, soil, cups Plastic wrap Text
50219 Describe the major stages that characterize the life cycle of the frog and butterfly as they go through metamorphosis.	Tadpole eggs, tanks, nets, butterfly chrysalis, tank (or box) Videos, filmstrips and literature Ron and Nancy Goor. Insect Metamorphosis George, Jean C.. The Moon of the Monarch Butterflies

Suggested Instructional Strategies

Read text and do Investigative Review

Hatch tadpole eggs and observe growth and development of frogs.

Hatch butterflies and observe their growth and development.

Assessment

Paper and pencil test

Students will draw a diagram of the life cycle of a butterfly and a frog.

Students will explain orally or written the meaning of metamorphosis.

Projects about other animals who go through metamorphosis. ex: posters, reports, collages, etc.

Unit: Solar System

Topic:

Student Learning Objectives	Textbook References, Resources and Materials
50213 Recognize that the earth is part of a system called the "solar system" that includes the sun (a star), planets, and many moons. The earth is the third planet from the sun in our solar system.	Videos, filmstrips, and literature. E.C. Krupp. The Moon and You Simon, Seymour. The Sun Ian Ridpath. Atlas of Stars and Planets Jobb, Jamie. The Night Star Book Becklake, Sue. Space, Stars, Planets, and Spacecraft ** We need these books Display models (buy) Text
50214 Recognize that the earth revolves around (orbits) the sun in a year's time and that the earth rotates on its axis once approximately every 24 hours. Make connections between the rotation of the earth and day/night, and the apparent movement of the sun, moon, and stars across the sky.	Lightsource (lamps, flashlights, etc.) Globes Styrofoam balls Skurzynski,Gloria Zero Gravity Text
50215 Describe the changes that occur in the observable shape of the moon over the course of a month.	Videos, filmstrips and literature. Simon, Seymour. The Moon Calendar master Styrofoam balls Lightsource Text Posters
50309 Describe lunar and solar eclipses and the observed moon phases. Relate them to the relative positions of the earth, moon, and sun.	Videos, filmstrips, and literature Twain, Mark A Connecticut Yankee in King Arthur's Court Light source Styrofoam balls Pencils/wooden sticks Calendar master

Suggested Instructional Strategies

Demonstrate the phases of the moon as well as solar and lunar eclipse using styrofoam balls and light sources.

Keep a calendar of the phases of the moon for one month.

Read text and do Investigative Review

Assessment

Paper and pencil test

Assess the calendar of the phases of the moon.

Students will compare and contrast a solar and lunar eclipse.

Unit: Water and Water Cycles

Topic:

Student Learning Objectives	Textbook References, Resources and Materials
50210 Describe how water on earth cycles in different forms and in different locations, including underground and in the atmosphere.	Text Plastic bags (zip loc) Videos, filmstrips, and literature. Stwertka, Eve and Albert. Drip Drop, Water's Journey
50229 Describe how water can be changed from one state to another by adding or taking away heat.	Text Videos, filmstrips and literature Cole, Joanna. The Magic School Bus at the Waterworks

Suggested Instructional Strategies

Read text and do Investigative Review

Students do activity Water Ups and Downs on pg D13 in "Discovery Works" Teacher's manual Earth's Water.

Class discussion.

Assessment

Paper and pencil test

The students will explain the three forms water can take, how this occurs and give examples of each. This can be done orally, written or in a diagram.