DOCUMENT RESUME

ED 428 393 CS 216 627

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TITLE Our Physical World. Language Arts Theme Units: Cross-Curricular Activities for Primary Grades.

INSTITUTION ERIC Clearinghouse on Reading, English, and Communication, Bloomington, IN.; Family Learning Association, Bloomington, IN.

SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.

ISBN ISBN-1-883790-37-9

PUB DATE 1999-00-00

NOTE 86p.

CONTRACT RR93002011

AVAILABLE FROM ERIC Clearinghouse on Reading, English, and Communication, 2805 East 10th Street, Suite 150, Bloomington, IN 47408-2698.

PUB TYPE Guides - Classroom - Teacher (052) -- ERIC Publications (071)

EDRS PRICE MF01/PC04 Plus Postage.

DESCRIPTORS Class Activities; Hearing Impairments; *Hearing (Physiology); Integrated Activities; *Language Arts; *Light; *Magnets; Primary Education; *Science Instruction; Teaching Guides; Thematic Approach; Units of Study; Weather

IDENTIFIERS *Seasons

ABSTRACT

This book is part of a series of books presenting ready-to-use instructional units on themes typically taught in the primary grades. The topics focus on science, math, social studies or literature, but use language arts skills consistently in each unit. Each book in the series also uses as many frames of mind or intelligences as possible. Within a book, each unit contains: (1) an introduction on how the theme can interest students; (2) a brief list of targeted ideas; (3) suggested ways to connect units; (4) an introductory narrative on the unit theme; (5) suggested procedures for using the theme and involving children; (6) related language arts activities; (7) related extension activities; and (8) lists of trade books related to the unit theme. This book, "Our Physical World," offers four units: "The Mystery of Light and Shadow"; "A Polar Attraction Mystery," dealing with magnets and some of their history; "Four Parts Every Year," dealing with seasons and weather; and "Do You Hear That?" dealing with sound, hearing, hearing difficulties, and sign language. Appendixes offer: ideas on making and using learning centers; ideas on making and using bulletin boards and file folders; a glossary; directions on how to make a book; and a short list of teacher resources. (SR)

LANGUAGE ARTS THEME UNITS

CROSS-CURRICULAR ACTIVITIES FOR PRIMARY GRADES

OUR PHYSICAL WORLD

- LIGHT AND SHADOW
- MAGNETS
- THE SEASONS
- SOUND AND HEARING

BY

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ERIC

CLEARINGHOUSE ON READING, ENGLISH, AND COMMUNICATION

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
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THE FAMILY LEARNING ASSOCIATION

Our Physical World

by
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The Family Learning Association
and
ERIC Clearinghouse on Reading, English, and Communication

Bloomington, Indiana

Published in 1999 by
The Family Learning Association
3901 Hagan Street
Bloomington, IN 48401
and
ERIC Clearinghouse on Reading, English, and Communication
2805 East 10th Street, Suite 150
Bloomington, IN 47408-2698

Editor: Dr. Naomi Ritter
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This publication was prepared with partial funding from the Office of Educational Research and Improvement, U.S. Department of Education, under contract no. RR93002011. Contracts undertaking such projects under government sponsorship are encouraged to express freely their judgement in professional and technical matters. Points of view, however, do not necessarily represent the official view or opinions of the Office of Educational Research and Improvement.

Table of Contents

Introduction To The Series

Cross-Curricular Theme Units

This series presents instructional units on themes typically taught in the primary grades. Cross-curricular, multi-faceted learning is at the heart of these units.

Though the topics focus on science, math, social studies or literature, we use language arts skills consistently in each unit. Listening, speaking, reading, and writing activities show children that no matter what content they learn, they will increase their effectiveness through the communication skills that lead them through these units of study.

Encourage your students to discover through play and observation, then to share ideas and surprises with you or with other students. We remind you to integrate all of the language arts while students watch their guinea pig or follow the progress of a box turtle.

> Writing needs to be a significant part of every unit. Take dictation from non-writing students, to show them how to act like a writer. Have students regularly write their own books, make picture books, and write the text that will help them share their knowledge.

Each unit in this series uses as many frames of mind or intelligences as possible. Howard Gardner (*Multiple Intelligences, 1993*) lists seven frames of mind and the activities that work with them:

- Literary: stories, poems, rhymes;
- Logical-mathematical: numbers, counting, graphing, logic;
- Bodily-kinesthetic: physical activity, games, acting-out;
- Visual/spatial: art, theatre, reading, writing, producing;
- Musical: songs, rhythm, listening, instruments;
- Interpersonal sociological connection to others: speaking, listening, sharing;
- Intrapersonal psychological connection with one's self: reflection, metacognition, feelings, and internal discourse.

Give your students a chance to express themselves across this range of intelligences by following the guidelines in each unit.

How to Use These Theme Units

This book offers you:

- ☛ Ready-to-use theme-oriented units that integrate the language arts across the science and social science curricula;

- Ways to connect the units meaningfully with a required curriculum;
- Unit goals that focus your day on enjoyable student-centered experiences;
- stimulating "grabbers" from children's literature, which will elicit child involvement;
- sample questions to pose about the readings;
- a wealth of resources that can lead you wherever your particular situation demands.

This book also gives you many choices for expanding each unit theme into a cross-curricular learning adventure. So you can readily:

- use the Appendices to create multimedia learning cetners featuring a computer, audiotapes, library books, and an area for writing and artwork;
- find ways to build on children's prior knowledge, thus reinforcing their confidence for further explorations;
- develop more learning strategies from the springboard of these units.

The units in each volume work well together for an extended exploration of the volume topic. Or they may use them separately and independently. In either case, you have the opportunity to expand your students' vocabulary, knowledge, and skill. Speaking of vocabulary, in *Appendix C* you will find a *Glossary* that defines our use of terms. Several other *Appendices* give you more detail on the activities cited in these lessons. After selecting an instructional unit and pulling together the necessary materials, we suggest the following procedure:

1. Read or paraphrase Part IV, the *Introductory Narrative.*
2. Ask your students to share their knowledge on the topic.
3. Read the book recommended in Part V. 2., to enrich the students' understanding of the theme.
4. From the options listed, select the activities that will best involve your students. You may want to ask the children to select the activities that suit them.
5. Toward the end of your study, you may choose any or all of the activity pages to reinforce the knowledge or skills that you are highlighting.

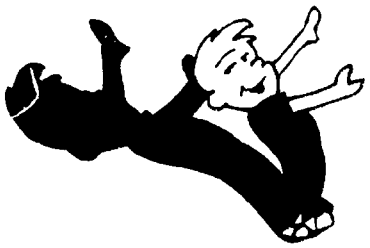
You may reproduce and distribute the *Activity pages* as needed. You may also want to distribute the *Introductory Narrative*, so your students can read along or read it independently.

We suggest that you build learning centers that have artifacts, books, games, activity sheets, illustrations, and other materials that expand and enhance the theme of each unit. You can find ideas for learning centers in the Appendix.

Creative minds will find numerous ways to turn these units into delightful and profitable learning experiences.

Unit 1:

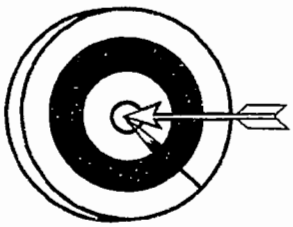
The Mystery of Light and Shadow



I. Introduction: How the Theme Can Interest Students

Children usually take light for granted. When it gets dark outside, they put on lights in the house and continue to do activities inside. They know that when they get up in the morning there will be light, even if the sun is not shining. This unit will be interesting to them because it will make them think about light and how it affects us.

II. Targeted Ideas



- Light appears to travel in a straight line.
- When something blocks light beams, they become shadows.
- Light travels through some materials.
- Light gets bent, or refracted, when it travels through water.
- Light is a mixture of many colors. We can see these colors in a rainbow.

III. Making Connections

When studying Unit 3 in this Volume, *FOUR PARTS EVERY YEAR*, you may want to talk about how the position of the shadows changes with each season. Students will have fun looking at the shadows tall buildings make when they study Unit 2 in Volume V, *SAFARI DOWN MY STREET*. In Volume VI, Unit 1, *FROM FIELD TO FEAST* will remind students that light must shine on food for it to grow.

IV. The Unit Theme: An Introductory Narrative to Read to Students

How Light Travels Around Objects

Light travels in a straight line until something gets in the way. When the light beam runs into something, it stops moving and a dark spot appears behind it. That dark spot is called a shadow. Turn on a flashlight and look at the beam. Do you see the straight lines on the edges of the beam? Put a book in front of the beam. What happened?

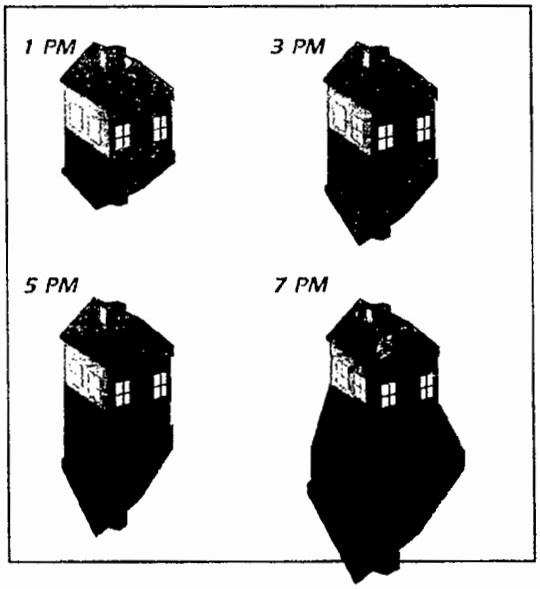
Shadows come in many shapes and sizes. It's fun to try catching one. But you must watch where the shadow slips up on you or runs ahead. It's very slippery. When you are out on a sunny day and the sun is in front of you, your shadow holds onto your shoes and follows you—no matter how fast you run. If you turn around, so the sun is behind you, your shadow still holds onto your shoes; but it runs ahead of you instead of following. As hard as you try, you cannot catch it. And it won't leave your feet. Try it! The only time your shadow will turn loose is when you jump up into the air. But you can't stay there. When you land back on the ground, there it is again, holding onto your feet.

Have you ever seemed to stand in a "puddle" shadow? If the sun is right over you, your shadow looks like a puddle beneath you. But hard as you try, you will not be able to step out of the "puddle."

Look around you. Even the trees have shadows. Where is the shadow? If the tree shadow looks like a "puddle" shadow, the sun is high in the sky. It is probably around noon. If the tree shadow is coming your way, behind the tree, the sun is in front of the tree. Look quickly, your shadow is behind you too. But if the tree's shadow is on its back side, where is the sun, and where is your shadow? Look and see. Your shadow is leaning toward the tree because the sun is behind you. Can you make your shadow touch the top of the tree? Walk around and see. That is the only way you will ever be able to reach out and touch a treetop.

Look around your yard. Even your house has a shadow. As the day moves on, notice where the house

(continued on next page)



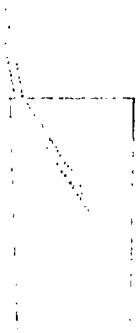
IV. The Unit Theme: An Introductory Narrative to Read to Students (cont.)

shadows fall. They change as the sun moves, just like your shadow.

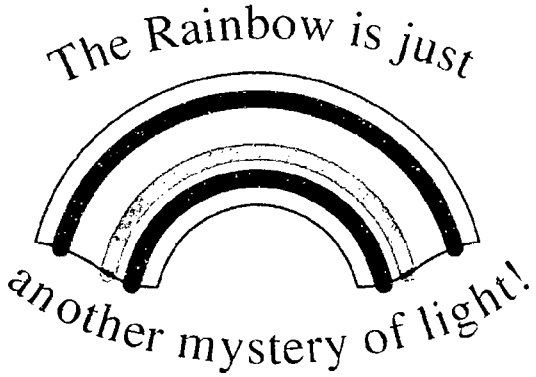
You can even find shadows inside your house. When the lights are on, the light hits some object and throws a shadow behind it. Look at someone reading a newspaper. The light behind the person's chair throws a newspaper shadow down into the reader's lap. Go into the kitchen. If your mother is standing at the stove and the ceiling light is on, it looks like she is standing in a shadow puddle.

Another interesting thing about light is that it can bend. Then why doesn't light bend around objects instead of making shadows? Because the object is a solid material, or opaque. Your body is opaque, a book is opaque, a tree is opaque. Any object that you cannot see through is opaque, so light cannot travel through it.

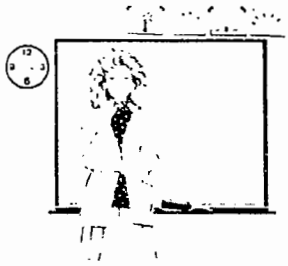
When sunlight comes up in the morning, it enters your bedroom through a window. The window glass is transparent. Transparent objects let light pass through. Another substance that light can travel through is water. Put a glass of water in front of the window or a light. The light will pass through. When this light is passing through the substance, it is bent, or refracted. Place a straw in the glass of water. The straw seems to bend, doesn't it? But that is only because the light entering the water hits against the straw. Take the straw out. It is still straight.



Isaac Newton experimented with light using a prism. A prism is a triangular-shaped glass object that lets light pass through in angles that cause the light to split apart. The light as our eyes see it is called white light. The white light consists of many colors. We see rainbows because light has passed through raindrops, which acted as prisms, splitting the light into many colors. The raindrops have refracted, or bent, the colors by different amounts, making them spread out, or disperse. That is why we see this ribbon of colors. That's why the rainbow looks like a ribbon of colors.



V. How to Use the Theme: Procedures for Demonstrating its Functions and Involving Children



1. Questions to Pose About the Narrative

These sample questions are just a start; they may lead you to others that will help students focus on the essential information in this unit.

1. What causes a shadow?
2. What happens when light shines through water?
3. When do you not have a shadow? Why?
4. What makes a rainbow in the sky?
5. What is a prism?
6. What is white light?

2. Listening to Literature: A Sample Text and How to Use it

Tompert, Ann. *Nothing Sticks Like a Shadow.*

To win a bet, Rabbit tries to get rid of his shadow with the aid of many animal friends.

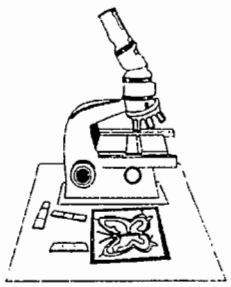
Options for Student's Response.

1. Before reading this book, ask students if they have every tried to get away from their own shadows. Could they? What happened? Let students share their experiences, build on those experiences, and question their assumptions about shadows.
2. As you read, stop at intervals to allow for questions, discussion and predictions.
3. What challenge did Woodchuck give Rabbit?

Options for Student's Response (cont.)

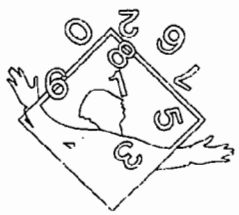
4. What suggestions did the animal friends give to help Rabbit get rid of his shadow?
5. Take the class outside on the playground. Have them try to get rid of their shadows.
6. Take dictation from the students. What did you do to try to get rid of your shadow? Why didn't it work?
7. Raccoon said that a shadow is a good thing to have. Why?
8. For a while, Rabbit's shadow disappeared. What happened to it?
9. After reading the book, let students select from these activities:
   a. Write a story about your own shadow.
   b. Make a wordless picture book about the story.
   c. Retell the story to a friend using your wordless picture book.
   d. Design a bookmark about the book.

3. Science Demonstrations



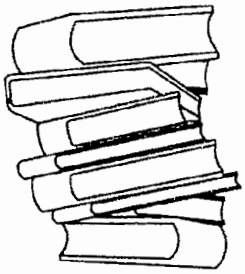
1. Make a sundial/shadow clock.
2. Make a pinhole camera.
3. Make a periscope. Find the directions in *Shadows and Reflection.*
4. Make a rainbow.
5. Make a color box. Find the directions in *The Science Book of Color.*
6. On the playground, experiment with body shadows. Measure shadow lengths.
7. Experiment with prisms. Record observations in a learning log.

4. Math Demonstrations



1. Measure body shadows every half-hour. Graph shadow measurement data.
2. Compare time data from the sundial/shadow clock with the classroom clock.
3. Collect the weather report for one month. How many daylight hours were there? Compute the average daylight hours for each week and for the month. Graph the data.

5. More Books for Response



1. Anno, Mitsumasa. *In Shadowland.*

   Chaos descends on Shadowland when the watchman leaves his post to join a little match girl on a snowy street in the real world.

2. Asch, Frank. *Bear Shadow.*

   Bear tries everything he can think of to get rid of his shadow.

3. Fleischman, Paul. *Shadow Play.*

   While visiting the county fair, a brother and sister are enthralled by a shadow puppet show of "Beauty and the Beast," in which one man makes all the shadows.

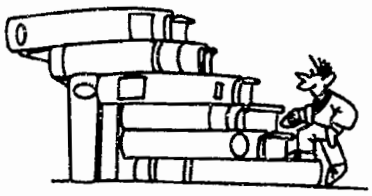
4. Marahaski, Keiko. *I Have a Friend.*

   A small boy tells about his friend who lives with him, follows him, and is sometimes is very tall. But the friend disappears when the sun goes down.

Options for Student Responses

1. Ask students to tell you everything they know about light. Web their statements. Then ask them to think about shadows. Use Think-Pair-Share to talk about: "What does light have to do with shadows?" After a few minutes, have the students share their discussions. Web their perceptions about shadows.
2. Display numerous pictures of light and shadow. Include outdoor and indoor scenes. Collect the books from the Trade Books lists. Form small groups. Pass a book to each group. Give them a few minutes to look at all the pictures and discuss what they see. Then pass the books around to another group. Continue this activity until each group has looked at every book. Place the books in a Center for later use.
3. Several nonfiction books have light and shadow science activities. Engage students in some of these activities, and elicit responses for collecting data.

VI. Related Language Arts Activities



1. Listening and Discussion

- Tell "shadow tales" using shadow puppets.
- Present shadow skits to the class.
- Invite a scientist to speak about light and shadow.
- Interview the scientist about his life and career.
- Share peer stories and poems.

2. Individual and Group Writing

- Write a shadow skit to present to the class.
- Write a Shadow Facts Book.
- Write and illustrate an Experiment Log.
- Keep a learning log to record information about light and shadow. Activity 5 provides some expository frames for the log.

3. Reading

- Read a book about light and shadow with a buddy.
- Read about Leonardo da Vinci's study of light and shadows. How did he get interested in studying about light and shadow?
- Read about scientists who have used light and shadows in their research. What medical advances have occurred because of these studies?

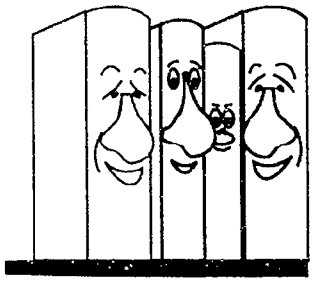
VII. Related Extension Activities: Using Language Arts to Teach Science in Personal or Small Group Work

1. Individual and Team Projects

- Make a **time-line** about developments in the study of light and shadow.
- Make a **diorama**. Use hanging or standing objects with a pocket flashlight to create shadows at different angles.
- Make silhouette portraits. Use the silhouettes as covers for journals.
- Draw a rainbow mural.
- Make large "fact" cards using large construction paper sheets. Prepare a report for the class. The fact cards will be your "cue" cards.
- Become a shadow. How would a shadow "feel" if it had a life? Use Activity #1 to write and illustrate a first-person story.

2. Class Field Trips

- Visit a science museum.
- Visit an optical lab.
- Visit a medical lab.



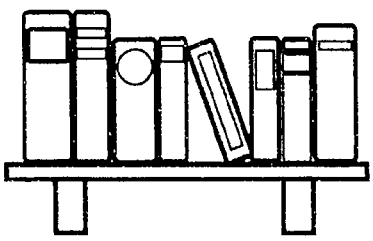
VIII. Trade Books

Non-Fiction

Ardley, Neil. *The Science Book of Color*
Alexenberg, Melvin L. *Light and Sight*
Bulla, Clyde Robert. *What Makes a Shadow*
Burnie, David. *Light*
Catherall, Ed. *Light*
Goor, Ron and Nancy. *Shadows Here, There, and Everywhere*
Gore, Sheila. *My Shadow*
Hoban, Tana. *Shadows and Reflections*
Simon, Seymour. *Shadow Magic*

Fiction

Anno, Mitsumasa. *In Shadowland*
Asch, Frank. *Bear Shadow*
Dorros, Arthur. *Me and My Shadow*
Fleischman, Paul. *Shadow Play*
Gackenbach, Dick. *Mr. Wink and His Shadow*
Gore, Sheila. *My Shadow*
Mahy, Margaret. *The Boy with Two Shadows*
Marahaski, Keiko. *I Have a Friend*
Tompert, Ann. *Nothing Sticks Like a Shadow*



ACTIVITY 1

NAME _____

VOCABULARY WORDS: shadow, sunlight, treetops, noon, morning evening, chase, hide, puddle.

DIRECTIONS: Use the Story Frame to help the students write a story from the perspective of the shadow.

A DAY IN SHADOW'S LIFE

My name is Shadow. Some days, when the sun comes up, I can _____ . My partner, Chris, likes me to _____ .

When we are outside together, we _____ _____ . If the sun is low, my hands _____ the treetops. But Chris cannot reach the treetops, though he tries. When the sun is in front of Chris, I _____ . He cannot _____ .

I stick _____ . At noon, the sun is _____ . Then I _____ .

Chris cannot get away from me. I _____ to his feet like glue. In the late _____ , the sun is low in the West. I am much _____ when the sunlight is low to the ground. It really makes me grow. Chris tries to catch me, but he _____ .

At night, I have to _____ . Maybe tomorrow the sun _____ . Then, I will _____ .

ACTIVITY 2

NAME _____

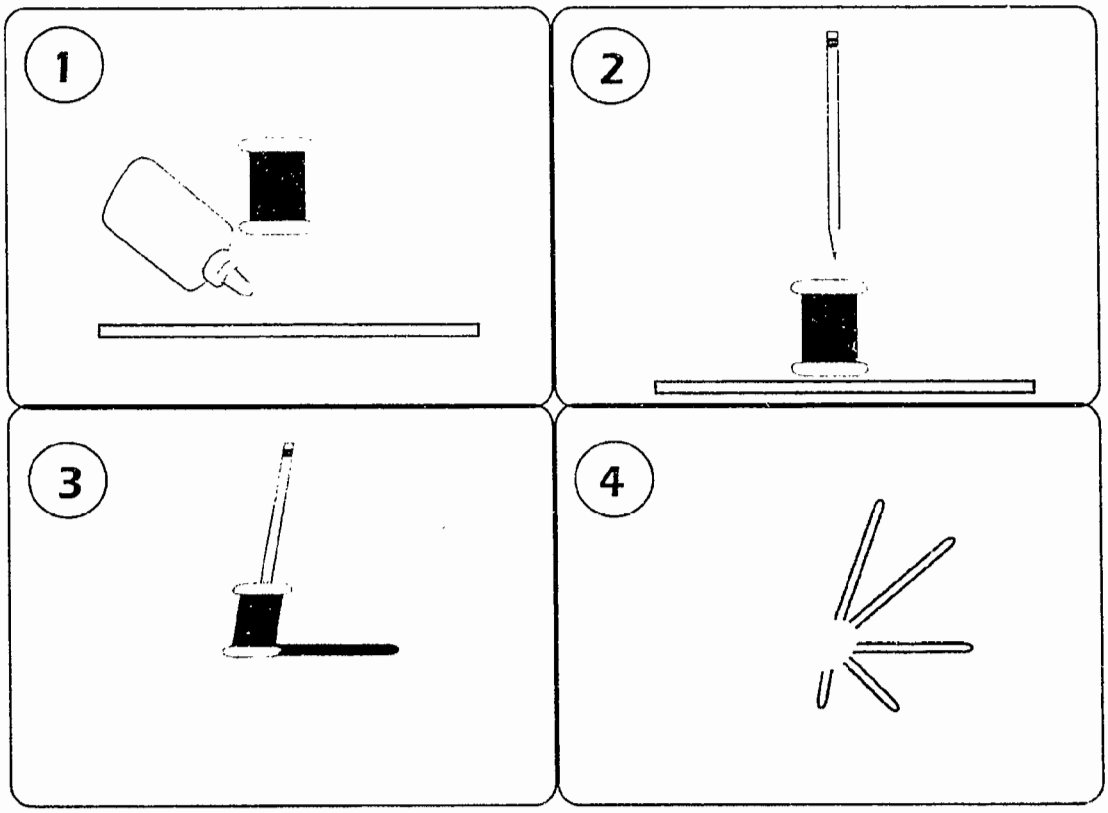
A SHADOW CLOCK

SUPPLIES: Cardboard (6" X 9")
Empty thread spool
Glue
Pencil

DIRECTIONS:

1. Glue the thread spool to the center of the cardboard.
2. Place a pencil in the center hole of the spool.
3. Place the cardboard/spool in open sunlight.
4. Trace around the end of the pencil/shadow every hour. Write the hour beside the traced shadow.

At what hour was the shadow the longest? Shortest?



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ACTIVITY 3

NAME _____

VOCABULARY WORDS: shadow, puddle, bend, opaque, transparent, refracted, prism, split apart, rainbow, ribbon.

DIRECTIONS: Complete the sentences using the vocabulary words.

1. A dark spot behind an object is a _____.

2. If the sun is directly above you, it looks like you are standing in a _____shadow.

3. Light cannot _____ around solid objects.

4. Window glass is _____. It lets light pass through.

5. When you place a straw in water, the straw looks bent. The light passing through water is _____.

6. A prism will _____ _____ light.

7. The light coming through the prism makes a _____.

ACTIVITY 4

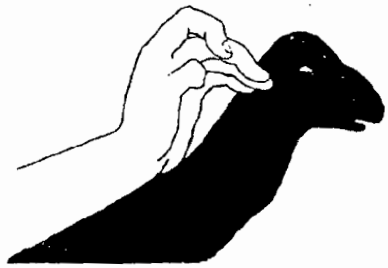
NAME _____

DIRECTIONS: Study the hand positions. Use a flashlight to make shadow pictures. If two flashlights are available, have two students practice making shadow pictures on a screen. While showing the pictures, students can tell impromptu stories using their shadow characters.

Name each shadow picture.

Can you make up more hand positions? Try other positions and draw its shadow. Name each shadow.

1. _____ 2. _____



3. _____

ACTIVITY 5

NAME _____

DIRECTIONS Use the paragraph frames below to share your knowledge about Light and Shadow. Make a Learning Log of frames when you learn new information.

Sequence Frame

I learned some interesting facts about _____.

First, _____

_____.

Next, _____

_____.

Then, _____

_____.

After, _____

_____.

Basic Reaction Frame

At first, I thought _____

_____. But after reading, I know that

_____. I also

learned that _____

_____

_____

_____.

Suggestions for Teachers

Activity 1

Read the Writing Sample to the class. Take the students out into the playground on a sunny day. Let them run and observe their shadows. After returning to the class, help the students complete the story frame. Lead them to use the vocabulary terms where appropriate.

Activity 2

Give each student or each pair of students the supplies to make a shadow clock. Place them outside for the day. Have the students mark the pencil shadow placement on the cardboard every hour. Lead the class in discussion at the end of the day. Elicit questions and queries from them. Use the shadow clock on other days. Did the shadows land at the same place on each day?

Activity 3

Read the Writing Sample to the class again. Discuss the vocabulary terms with the students. Have students complete the sentences, and add this sheet to a learning log.

1. shadow; 2. puddle; 3. bend; 4. transparent;
5. refracted; 6. split apart; 7. rainbow

Activity 4

Bring in a flashlight to demonstrate making shadow pictures. Select a story, and let students make shadow pictures to go with it.

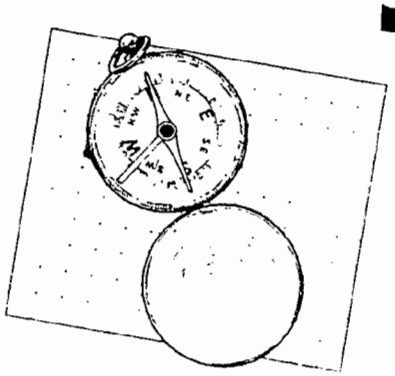
1. Bird (dove); 2. Dog; 3. Goose

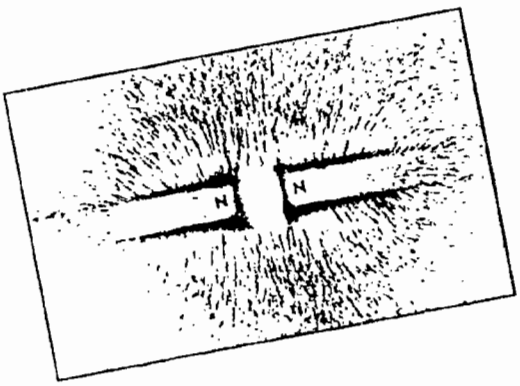
Activity 5

After students have explored books about shadow and light, pair them to Think-Pair-Share what they have learned. Accept student ideas. Elicit discussion about shadows and light. Record student responses on chart paper for whole-class discussion.

Unit 2:

A Polar Attraction Mystery



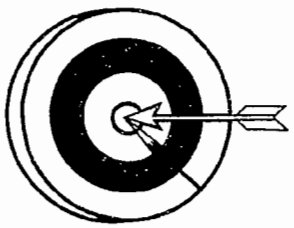


I. Introduction: How the Theme Can Interest Students

Children know that magnets attract "something." They don't always know what that is. Several games use magnets to make designs with metals. This unit introduces magnets and some of their history.

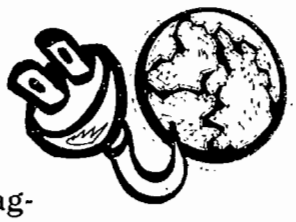
The Activities provide many opportunities to use all the language arts in exploring magnets. Help the students realize the usefulness of magnets beyond toys and classroom experiments.

II. Targeted Ideas



- There are natural and man-made magnets.
- The earth is a magnet.
- Sailors used magnets, called lodestones, for directions.
- Magnets have a north and south pole.
- We need magnets for telephones, television, radios, and many other things we use in our homes.

III. Making Connections

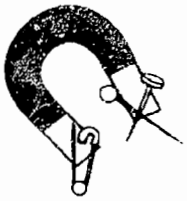


This unit integrates well with several other units in this series. In Volume V, Unit 2, *SAFARI DOWN MY STREET*, you may want to talk about how different offices and stores in the community use magnets. They are also important in the heavy equipment used to construct buildings and streets. *COUNTRY COUSIN*, Unit 3 in Volume V, will help children see how farmers use magnets. When you talk about how pilots, truck drivers, and sailors know which direction to take in Volume VI, Unit 2, *RAILS, WINGS, RUDDERS, AND WHEELS*. you can remind students about this unit and the lodestone.

IV. The Unit Theme: An Introductory Narrative to Read to Students

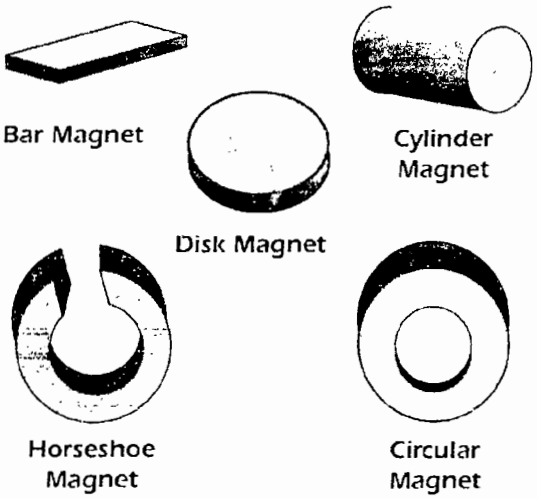
Discovering Magnets and How They Work

Do you like solving mysteries? Well, nature has created a great mystery: the magnet. Even the earth, the planet that you live on, is a huge magnet. Let's become detectives and discover the mysteries of the mighty magnet.



A magnet attracts (or pulls to itself) objects made of metal, such as iron, nickel, or cobalt. This pull is so strong that a small pin or paper clip will stick to the magnet. You cannot shake it loose because of the pull inside the magnet. And the magnet can attract several pins or clips at the same time.

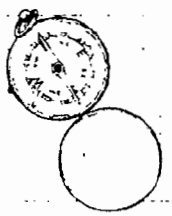
There are several types of magnets. Some look like horseshoes, some look like a candy bar, some like a round doughnut, and some look like a pipe, or a cylinder.



Even though there are different shaped magnets, all magnets have the same mysterious power to attract metal objects. All magnets have a north pole and a south pole. Even our Earth has north and south poles.

Where did magnets, as we know them, come from? A stone called magnetite is made of iron ore. Long ago, shepherds tending their sheep on the hillsides of a country known today as Turkey discovered magnetite. The shepherds used a long wooden stick called a staff to help them climb hills. The end of the wooden staff had an iron tip, so the wood would not wear down.

When they walked across a hill where magnetite stone was in the ground, the staff stuck to the stone. They thought it was magic. They did not know they had discovered a natural magnet, which could be very useful to them.



Much later sailors found a way to use magnetite to make a compass. They put the strange magnetite stones on a piece of wood and floated it in a bowl of

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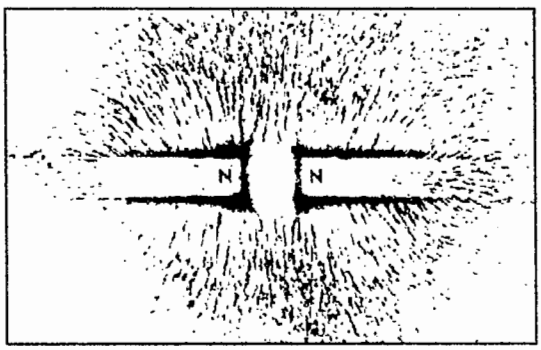
IV. The Unit Theme: An Introductory Narrative to Read to Students (cont.)

water. The same end of the magnetite stone always pointed north. With this simple device, sailors could always know the direction they were sailing. They no longer had to depend on the sun or the stars to guide them. Because the stone helped to guide them, they called it a lodestone. The word *lode* means "a path."

Just as the lodestone always pointed north, every magnet has a north pole and a south pole. The north pole will always attract the south pole of another magnet. North and south are opposite, so we say that opposite poles attract.

But if you place two north poles or two south poles together, they will push each other apart. So we say that poles that are the same, or like poles, repel. This repulsion happens because the magnetic field, or the strong force of the magnets, is at the ends of the magnets.

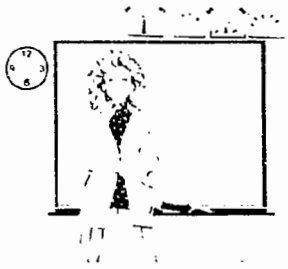
You can actually "see" the pulling power of the magnet working. When iron filings are sprinkled on a piece of paper that you lay across a bar magnet, the filings will move into a fan-shaped pattern around the two ends of the magnet. This pattern shows that the magnetic field, or force, is at each end of the magnet



Much later, scientists discovered they could make magnets with a battery. Then the magnets could produce electricity. We call this device the electromagnet. Heavy machines and equipment use the electromagnet to pick up heavy pieces of metal. Have you ever seen a disc magnet pull up a car? This huge disc is an electromagnet. It has created a huge force field that makes things work, just like the force field in the small magnets that picks up metal objects.

Nature's mysterious magnet is very useful. Without magnetism we would not have telephones, radios, or televisions. Without magnets we would not have electric motors and many other scientific machines. All these wonderful tools have resulted from the discovery of shepherds on a hill long ago.

V. How to Use the Theme: Procedures for Demonstrating its Functions and Involving Children



1. Questions to Pose About the Narrative

These sample questions are just a start; they may lead you to others that will help students focus on the essential information in this unit.

1. What causes magnetism?

2. How do we use magnets?

3. What can you pick up with a magnet?

4. Where do we use magnets in school? At home?

5. How do we know the earth is a magnet?

6. What is a lodestone?

7. How do scientists make electromagnets?

8. How do people use electromagnets?

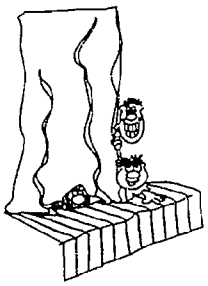
2. Listening to Literature: A Sample Text and How to Use it

Santrey, Laurence. *Magnets*

Discusses the qualities of magnets as components of many modern inventions, including television, the telephone, and the electric motor.

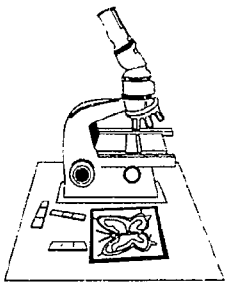
This book is an expository sample, whose abstract concepts demand that you teach it directly. Use the direct experience mode of introduction before reading the book to the class. Set up stations with different types of magnets and materials that magnets will and won't attract.

Options for Student's Response.



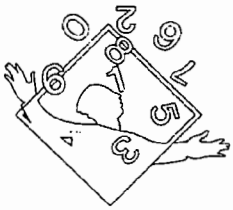
1. Place nails, paper clips, and pins on an overhead projector. As students observe the projection, use a magnet to pull the objects across the screen.
2. Have small groups of students at the exploration centers work with the magnets. Use **Think-Pair-Share** for them to discuss their observations.
3. List the uses for magnets (p. 11 in Santrey's *Magnets*).

3. Science Demonstrations



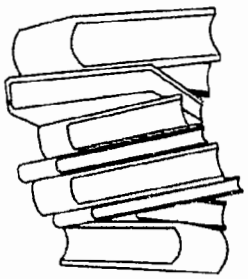
1. Research magnet uses: everyday items, medical equipment, heavy equipment, electric generators, power plants, ship navigation.
2. Collect magnets of different types. Include a compass, a telephone, and a radio. Ask the students what these things have in common. The compass may be the only item that students relate to a magnet.
3. Set up experiment stations where students can work with different magnets and materials. Supply experiment directions and necessary supplies at each station, and include books about magnets at each center. The activity pages provide options to use for students' responses to the experiments.
4. Collect items to use during experiments. Keep a supply record of items available and items needed.
5. Create a pictorial time-line about discoveries that led to the use of magnets.
6. Use *The Science Book of Magnets* to conduct experiments.
7. Discuss your experiments. Keep observations in a journal or the Mysterious Magnet Research Data Log described in Activity #5.
8. Measure magnet strength over a long period of time. Chart the changes in magnetic pull after each test. (Activity #3)
9. Measure the number of strokes needed to make a magnet. (See Activity #2.)
10. Make an electromagnet.
11. Use a Venn diagram to compare magnets and non-magnets.
12. Make a mural about the history of the lodestone. The mural will be a pictorial time-line.

4. Math Demonstrations



1. Create a graph to record the strength of magnetic pull.
2. Weigh objects used with magnets. Compare the size of magnets needed to lift each object.
3. Lift each item with various magnets. How much weight can each magnet lift? Graph the data.
4. Measure the sizes of different kinds of magnets. How far away can the magnet be and still attract objects? Experiment with different objects and magnets. Graph the data.
5. Using metal BBs, predict how many of them each magnet can attract. Experiment and graph the data.
6. Measure the circumference of a metal filings pattern created by each magnet. Chart the information.

5. More Books for Response



1. Adler, David. *Amazing Magnets.*

An introductory discussion of magnetism and various kinds of magnets found in nature.

2. Ardley, Neil. *Exploring Magnetism.*

This book provides action science and suggests many science experiments.

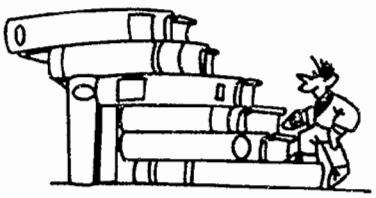
3. Kirkpatrick, Rena. *Magnets.*

An easy-to-read text with illustrations that introduces many facts about magnets.

4. Hogan, Paula Z. *The Compass.*

Traces the history of the compass from its invention by the ancient Chinese through its use by early explorers to modern uses and developments.

VI. Related Language Arts Activities



1. Listening and Discussion

- Invite speakers to talk about uses of magnets in many fields of business: crane operator, doctor, power plant operator, and ship's captain.
- Have students share books with each other. Discuss information gained from shared readings.
- Share student skits, poems, and stories.

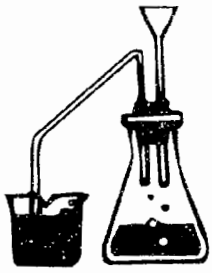
2. Individual and Group Writing

- Write a Magnet Concept Book. Illustrate each page.
- Make a *Fact Book* about magnets. Illustrate the facts and record data from your experiments.
- Make a magnet word card game. Write a magnet concept vocabulary term on each card, along with its definition and usage in a sentence. Glue a magnetic strip to each card. Attach a string and paper clip to a long pole. Students fish for a card, read the card, and pass the pole to other students.
- Using the same materials, make a word game. Write questions and experiments about magnets on each card. Attach a magnetic strip to each card. Use the string pole above to fish cards. Students perform the experiment written on the card.
- Use the Mysterious Magnet Research Log as a *Response Journal*.
- Write a story about the development of a useful piece of equipment that magnets made possible. Examples: MRI, telephone, radio, TV, construction cranes.

3. Reading

- Select books to read alone or with a buddy.
- Read about inventors who used magnets to create inventions like the radio, TV, and telephone.
- Have students in small groups read a book, then discuss their impressions. Record findings in a journal.
- Read about scientists who have used light and shadows in their research. What medical advances have occurred because of these studies?

VII. Related Extension Activities: Using Language Arts to Teach Science in Personal or Small Group Work



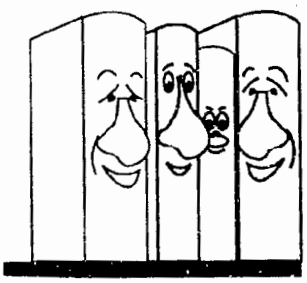
1. Individual and Team Projects

- Make a semantic web on the chalkboard. Place the word *magnet* in the center. Divide the class into groups, and ask each group to discuss everything they know about magnets. Then add statements from each group to the web. Keep activities at a high involvement/discussion level during the experiments.
- Create a magnet mobile. Cut out pictures of objects that use magnets to perform a job. Hang information strips from each picture to tell how we use the magnet.
- Construct a mobile about magnets. Add pictures of objects that the magnets attract and repel.

2. Class Field Trips

- Visit a power plant.
- Visit a cargo ship terminal.
- Visit an airport.

VIII. Trade Books



Ardley, Neil. *Exploring Magnetism*
The Science Book of Magnets
Cash, Terry. *Electricity and Magnets*
Catherall, Ed. *Magnets*
Gardner, Robert. *Science Projects about Electric ity and Magnets*
Gibson, Gary. *Playing with Magnets. With Easy-to-Make Scientific Projects*
Hogan, Paula Z. *The Compass*
Santrey, Laurence. *Magnets*
Vecchione, Glen. *Magnet Science*
Ward, Alan. *Magnets and Electricity*

ACTIVITY 1

NAME _____

VOCABULARY WORDS: magnet, attract, repel, battery, north pole south pole, nail, electromagnet, magnetic field, copper wire.

DIRECTIONS: Use the vocabulary words to complete the information given below.

1. A _____ will attract metal objects.

2. The _____ _____ is the force that attracts objects.

3. An electromagnet is made by using a _____, a _____ and a _____ _____.

4. The magnetic field is found in the _____ _____ and the _____ of each magnet.

5. The north pole of a magnet will _____the south pole of another magnet.

6. The north pole of a magnet will _____the north pole of another magnet.

7. The south pole of one magnet will _____the south pole of another magnet.

ACTIVITY 2

NAME _____

INFORMATION: You can make a magnet by stroking a nail in one direction with a strong bar magnet. How many strokes will it take to make the nail into a magnet? Experiment and record your findings.

MATERIALS NEEDED:

bar magnet
steel pins or paper clips
iron nail

1. Stroke the nail in one direction with the bar magnet. Count your strokes. How many strokes did it take before the nail would pick up a pin?

2. Add strokes of the magnet to the nail and try to pick up the pins. Did you pick up more pins with the nail when you made more strokes? How many more strokes? How many more pins could you pick up?

Number of Strokes	Number of Pins Picked Up
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Why did this happen? Explain your findings.

_____

_____

_____

_____

NAME _____

QUESTION FOR THE DAY

Will your magnet keep its strength? How can you find out?

SOLUTION

Measure the strength of your magnet every day for one week. Test the number of pins your magnet will pick up each day. Will it pick up the same number of paper clips? Try it.

DAY	PINS	PAPER CLIPS

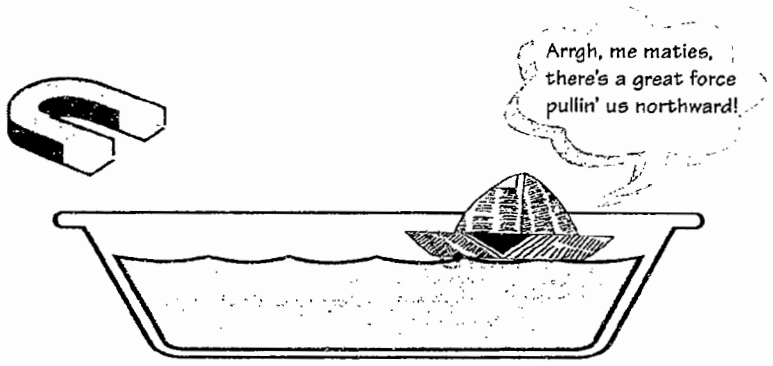
What happened? Summarize your findings.

ACTIVITY 4

NAME _____

MATERIALS NEEDED:

paper
paper clips
tub
water
magnet



DIRECTIONS:

Fold the paper to make small paper boats. Put water in the tub. Float the boats in the tub. Place your magnet in front of the boat, where there is a paper clip. What happens? Why?

Drop some paper clips into the tub. When you hold the magnet near the surface of the water, will the clips move across the bottom of the tub? Why? What is happening? Record your findings.

SUMMARY:

_____

_____

_____

_____

_____

_____

_____

_____

MYSTERIOUS MAGNET RESEARCH DATA LOG
BY

Name _____ School _____

INFORMATION: Which objects will your magnet pick up? Try it with different kinds of magnets. Does the shape or type of magnet make a difference? Do all types of magnets still attract the same objects? Record your data.

MAGNET	OBJECT	ATTRACT	NOT ATTRACT
#1			
#1			
#1			
#1			
#2			
#2			
#2			
#2			
#3			
#3			
#3			
#3			

What did the attracted objects have in common?

_____

_____

_____

Suggestions for Teachers

Activity 1

Review the vocabulary words with the class. Pair students to complete the sentences below.

1. magnet 2. magnetic field 3. battery, nail, copper wire
4. north pole, south pole 5. attract 6. repel 7. attract

Activity 2

Read the directions to make a magnet out of a nail. Provide ample supplies for each student. This is an opportunity to have students work together and discuss their findings. Ask students to explain their findings.

Activity 3

Set up stations, so students may measure magnet strength each day. Provide a large sheet of chart paper. Date each record. Following each strength measurement, record the number of pins or nails the magnet attracts. Show students how to record findings on the chart. Summarize data. For instance: Each day the magnet gets weaker, it will pick up fewer pins.

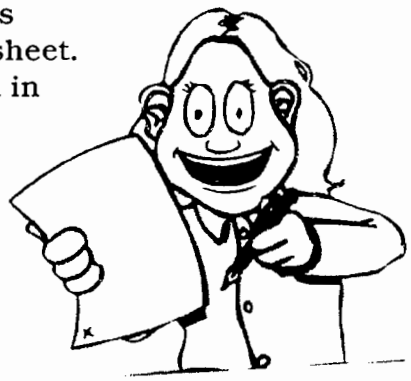
Activity 4

Help students make paper ships, and attach a paper clip to each. Supply different kinds of magnets. Let students play with the ships to discover how magnets can pull them across the water. Elicit discussion, and take statements from students to create a consensus summary statement.

Activity 5

Set up a center with magnets and various items. Supply each student with a worksheet. As students use the magnet, record data in the appropriate columns for each item.

ATTRACT	NOT ATTRACT
clip	feather
tack	pencil
needle	wooden block
safety pin	



Unit 3:

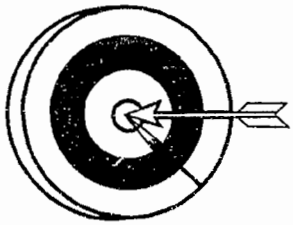
Four Parts Every Year

I. Introduction: How the Theme Can Interest Students

Most children know that we call regular weather changes the change of seasons. Most calendars show these changes. Some children will be able to tell distinct differences in seasons: snow in winter, blossoms in spring, full growth in summer, and falling leaves in autumn.

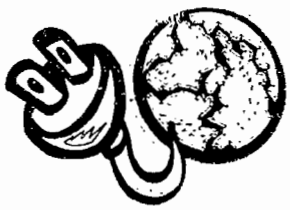
The time of year that you introduce this unit will determine how you begin. In winter you will want to feature that season. But of course you will include all four seasons in your study. Even though most children do not attend school in summer, it is important to include that season in your study.

II. Targeted Ideas



- The earth's movement causes seasonal changes.
- People wear different types of clothes according to the seasons.
- People do different types of work during different seasons.
- Animals prepare for each season in different ways.

III. Making Connections



You may coordinate this unit with any others dealing with people and/or animals in this series. Unit 2 in Volume V, *SAFARI DOWN MY STREET*, is relevant when discussing seasons in cities; Unit 3 in Volume V, *COUNTRY COUSIN*, shows how the seasons affect farm life; Unit 1 in Volume VI, *FROM FIELD TO FEAST*, shows which crops are appropriate for each season.

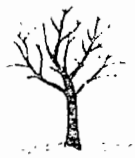
IV. The Unit Theme: An Introductory Narrative to Read to Students

Each Season Is Different for Humans and Animals

Whenever I have a birthday, another year has passed. That means that four seasons, or parts of time, have happened. The four seasons are summer, fall or autumn, winter, and spring. I like them all. The four seasons happen every year because our earth goes around the sun once each year. We can't feel the earth moving, but it is always revolving in space.

Summer is my favorite time of the year because I can be outside all the time. I

can swim too, and that's when my birthday comes. We always have a swim party and a picnic for my birthday.



Then comes autumn, the leaves on trees change to bright orange, red, yellow, and brownish-orange. They are really pretty. I collect the colored leaves to make leaf collages with them. Mom hangs them on our refrigerator door... until Dad says they have to go. One thing I don't like about Fall is that I have to rake leaves with Dad. I guess it's nice to have a big guy like me to help. Sometimes we pile the leaves up high and Dad lets me run and jump right into the center. That's a blast!

In winter all the leaves are gone. Winter is when the part of the earth where I live is tilted away from the sun. Days are cold, so I can't play outside every day. But I can bundle up with sweaters, a coat, mittens, and a hat. When it snows I can build a snowman. So even winter has its good days.

Spring is Mom's favorite time of the year. She loves to see the new leaves come out on the trees. Those are the leaves that I will be raking up next fall, though. In the spring, a lot of birds make their nests and care for new eggs. They stay so busy taking care of those hungry little mouths. A Mom never rests, even in bird-life. Not only do birds lay their eggs in spring, but animals have their babies too. Our neighbor's mare had a new baby horse, a foal. It comes up to the fence and takes sugar from my hand.

What is your favorite time of year? What do you like to do the most during that season?

BUSHY-TAIL'S SEASONS

Bushy-Tail, the brown squirrel, sees four seasons too. She knows exactly which one is coming. She knows how to take care of herself and be ready for each one.

In autumn, when the leaves change colors and the days get cooler, Bushy works very hard. She doesn't rake the leaves, but she is busy hunting for hickory nuts and

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IV. The Unit Theme: An Introductory Narrative to Read to Students (cont.)

collecting piles of acorns. She must put away most of the food she will need during the winter. She buries some nuts underground, and takes some into her nest in tree trunks. Then she knows where to find them when snow covers the ground and no nuts are visible.

Bushy's friends, Coony the raccoon and Chipper the chipmunk, are getting ready for winter too. But raccoons aren't exactly like squirrels and chipmunks. Coony eats himself into a stupor. That means he eats and eats and eats, getting very fat. Then when cold weather comes, he stays in his den for many days at a time. By springtime, Coony is skinny again.

Chipper collects food, just as Bushy does. She stuffs seeds and nuts into little pockets on each side of her mouth. When the pockets are full, she hides the food in underground nests or in holes under fallen leaves.

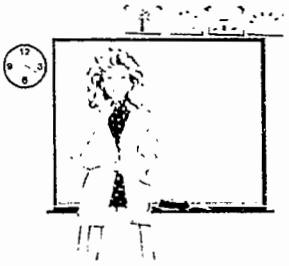
When winter comes Bushy, Chipper, and Coony are ready to stay indoors and wait out the snow and ice storms. They have grown thick winter coats to stay warm. They have their nests in trees, trunks, or under logs and roots. So they just sit out the winter, but they don't hibernate. They still come outside sometimes. You can watch frisky squirrels scurrying across the snow and jumping in the limbs of trees. Bears, woodchucks, and dormice hibernate. That means they burrow underground and sleep through the winter. They get ready by eating a lot in fall, just like Coony.

In spring these forest animals lose their winter coats and come out to stay. They have had their babies during the winter, and have eaten up most of their food supply. So in spring they must find food again. The mother animals are busy caring for the new babies. At first, the pups are blind and helpless. At three months they come out into the world with Mom. By autumn these babies have grown up and are ready to leave home.

In summer all the trees are green and growing again. There is plenty of food around for everyone. Squirrels chase one another, and raccoon mothers bring their babies down from the tree hollows. They are a hungry lot, so they look for fruits, vegetables, seeds, insects, meat, and bird eggs.

Then we come back around to autumn, and the whole cycle starts over with all the forest animals scurrying around to get food for another long, cold winter.

V. How to Use the Theme: Procedures for Demonstrating its Functions and Involving Children



1. Questions to Pose About the Narrative

These sample questions are just a start; they may lead you to others that will help students focus on the essential information in this unit.

1. Why don't we have snow in summer?

2. What is special about each season?

3. What can you do in summer?

4. What can you not do every day in winter?

5. Why do squirrels collect nuts in the fall?

6. Which animals hibernate, and what do they do in hibernation?

7. How long do forest animals need to grow up?

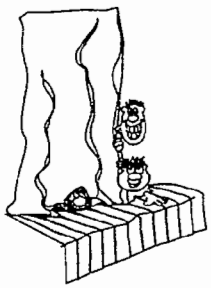
8. Would you like to hibernate?

2. Listening to Literature: A Sample Text and How to Use it

Updike, David. *A Winter Journey*

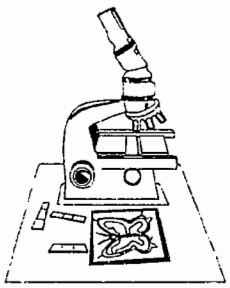
A boy named Homer and his dog, Sophocles, make their way home as a raging snowstorm approaches. Later that night, Sophocles runs out alone in the storm. Homer runs out to search for him.

Options for Student's Response.



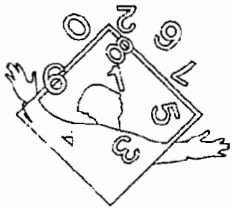
1. On the way back from the barber, Homer and his dog Sophocles got separated. Where do you think Sophocles went?
2. Where would you start looking for a lost dog in a snowstorm?
3. Discuss fantasy. How do you know this story is make-believe?
4. Would you like to change any part of the story? How would you change it?
5. After reading the book, let students select from these activities:
   a. Make a winter picture book, illustrating part of Homer's experience.
   b. Write a skit for one of the scenes.
   c. Write a diary entry for Homer about the experience.

3. Science Demonstrations



1. Study about different animals, birds, insects, and plants in each season. Which special abilities do they need to survive the seasonal changes?
2. Study winter hibernation animals. How do they hibernate? Where do they hibernate?
3. Study about different plants in each season. Which crops are planted in spring? When do they harvest them? Which plants cannot survive a cold winter?
4. Study weather reports for different seasons. Compare the changes in temperature and rainfall during each season.
5. Compare two different seasons using a Venn diagram.
6. Use Byles' *Experiment with Plants* for additional experiments:
   a. Light fantastic: leaves and seedlings.
   b. Breathing out: the process of photosynthesis.
   c. Sprouting seeds: growing seeds in containers.
   d. Living underground: tubers and bulbs.

4. Math Demonstrations

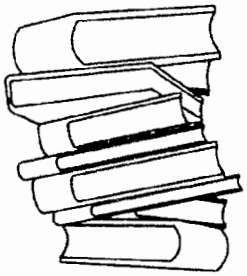


1. Graph animals that hibernate during the winter.

2. Poll students to find their favorite summertime activities. Make a graph of the data.

3. Provide weekly weather reports from fall, winter, spring, and summer. Compute the average temperature for each season. Graph the data.

5. More Books for Response



1. Fisher, Ronald M. *Animals in Winter*

Describes how animals face the rigors of winter by hibernating, migrating, storing food, or changing colors to blend with the winter landscape.

2. Graham, Ada. *Let's Discover Winter Woods*

While walking through a snow-covered wood, three children discover what happens to plants and animals during the winter.

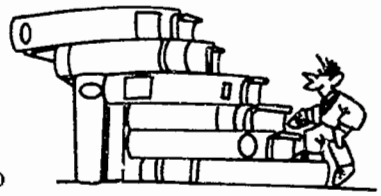
3. Hines, Anna G. *Come to the Meadow*

A little girl is eager to share the delights of the meadow with her family, but everyone is too busy until Granny suggests a picnic.

4. Patz, Nancy. *Sarah Bear and Sweet Sidney*

Sweet Sidney wakes up and begins to prepare eagerly for spring's arrival, but Sarah Bear insists it's still too dark and cold.

VI. Related Language Arts Activities



1. Listening and Discussion

- During shared reading, listen to peer Acrostic Poems and Fact Books.
- Pair students to take their stories, books, or poems to read to another class.

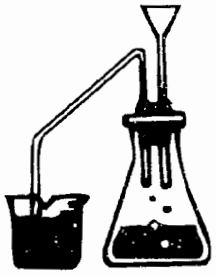
2. Individual and Group Writing

- Create a Seasons Picture Book. Write seasonal descriptions on each page.
- Write skits about experiences during each of the different seasons.
- Write an Acrostic Poem about one of the seasons. See an example in Activity #1.
- Write a cinquain (5-line) poem about one of the seasons.
- Create a newspaper about each season. See the suggested format in Activity #5.
- What is the most important or interesting thing about your favorite season? Write an Important Things Log. See Activity #3.
- Using a Venn diagram, compare two different seasons.
- Make a mural of winter habitats and hibernation. Label each animal that is hibernating. Attach a facts sheet beside the mural.
- Make dioramas of seasonal scenes and animal hibernation.

3. Reading

- Have students read about one season and collect data, so they can become experts about that season. Collect each student's information to add to the class Experts' Book. See the outline for a Handbook in Activity #4.
- Read about different animals and how they adjust to different seasons.
- Study different types of clothing worn during each season. Does the geographical location affect choices?
- Have students keep a Seasons Word Log of specific words they learn about the seasons. Organize the words into categories.

VII. Related Extension Activities: Using Language Arts to Teach Science in Personal or Small Group Work

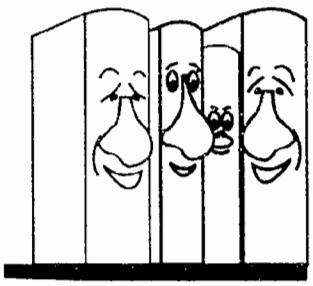


1. Individual and Team Projects

- Present skits created by the students.
- Make mural backdrops of scenes to use when presenting the skits.
- Design and illustrate a Seasons Fact Book, containing facts about each season.
- Using a map of the United States, compare seasonal changes in different regions. How much earlier do new plants bud in the southern states compared to the northern states? What causes the different onset of spring plant growth?

2. Class Field Trips

- Take a hike to visit natural habitats.
- Visit a Museum of Natural History.
- Visit a Science Museum.



VIII. Trade Books

Non-Fiction

Bennett, David. *Seasons*

Byles, Monica. *Experiment with Plants*

Cohen, Lynn. *Weather and Seasons*

Crawford, Sue. *The Seasons*

Hughes, Ted. *Season Songs* (poems)

Lerner, Carol. *A Forest Year*

MacKinnon, Debbie. *The Seasons*

Podendorf, Illa. *Seasons*

Santrey, Louis. *Autumn, Spring, Summer, Winter* (four separate books)

Schulz, Charles M. *Snoopy's Facts and Fun Book About Seasons*

Riley, James Whitcomb. *When the Frost Is On the Punkin*

Fiction

Borden, Louise. *Caps, Hats, Socks and Mittens*

Charles, Donald. *Calico Cat's Year*

Fisher, Ronald M. *Animals in Winter*

Fowler, Susi. *When Summer Ends*

Gibbons, Gail. *The Seasons of Arnold's Apple Tree*

Graham, Ada. *Let's Discover Winter Woods*

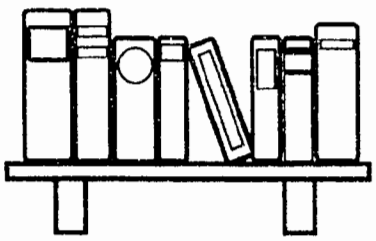
Hines, Anna G. *Come to the Meadow*

Kroll, Virginia L. *The Seasons and Someone*

Patz, Nancy. *Sarah Bear and Sweet Sidney*

Updike, David. *A Winter Journey*

Zolotow, Charlotte. *Summer Is...*



NAME _____

VOCABULARY WORDS: sled, blooms, skiing, new growth, colored leaves, swim, splash, sand, nesting, falling leaves, acorns, snow, picnics, mittens, showers

DIRECTIONS: Categorize the vocabulary words for:

SPRING	SUMMER	AUTUMN	WINTER
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Collect pictures or make drawings for each season. Make a collage of the pictures representing each season.

Pick a word from each season. Write an *Acrostic Poem* of each word.

Example:
Seeds and
Plants growing
Rain falling
Interesting birds
Nesting in trees
Green with new leaves.

NAME _____

DIRECTIONS: After the teacher explains what a *Cinquain* is, form a small group to write Cinquains for each season. The planning sheet can help your group brainstorm words to use. After finishing the first draft, meet with the teacher for suggestions. Then prepare polished versions and illustrate them for the class book.

Example: **AUTUMN**

Colorful, cool (adjectives)
Rustling, blowing, chilling (verbs)
I like playing in the leaves. (sentence)
Changes (noun)

PLANNING SHEET

1. List ten adjectives that describe the season: autumn, winter, spring, and summer. (Circle four of them.)

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

2. List 12 "*–ing*" verbs that describe actions for the season. (Circle three of them.)

_____ _____ _____
_____ _____ _____
_____ _____ _____

3. List three four-word sentences or phases that tell something about the season. (Circle one of them.)

_____
_____
_____

4. List four nouns that describe the season. (Circle two of them.)

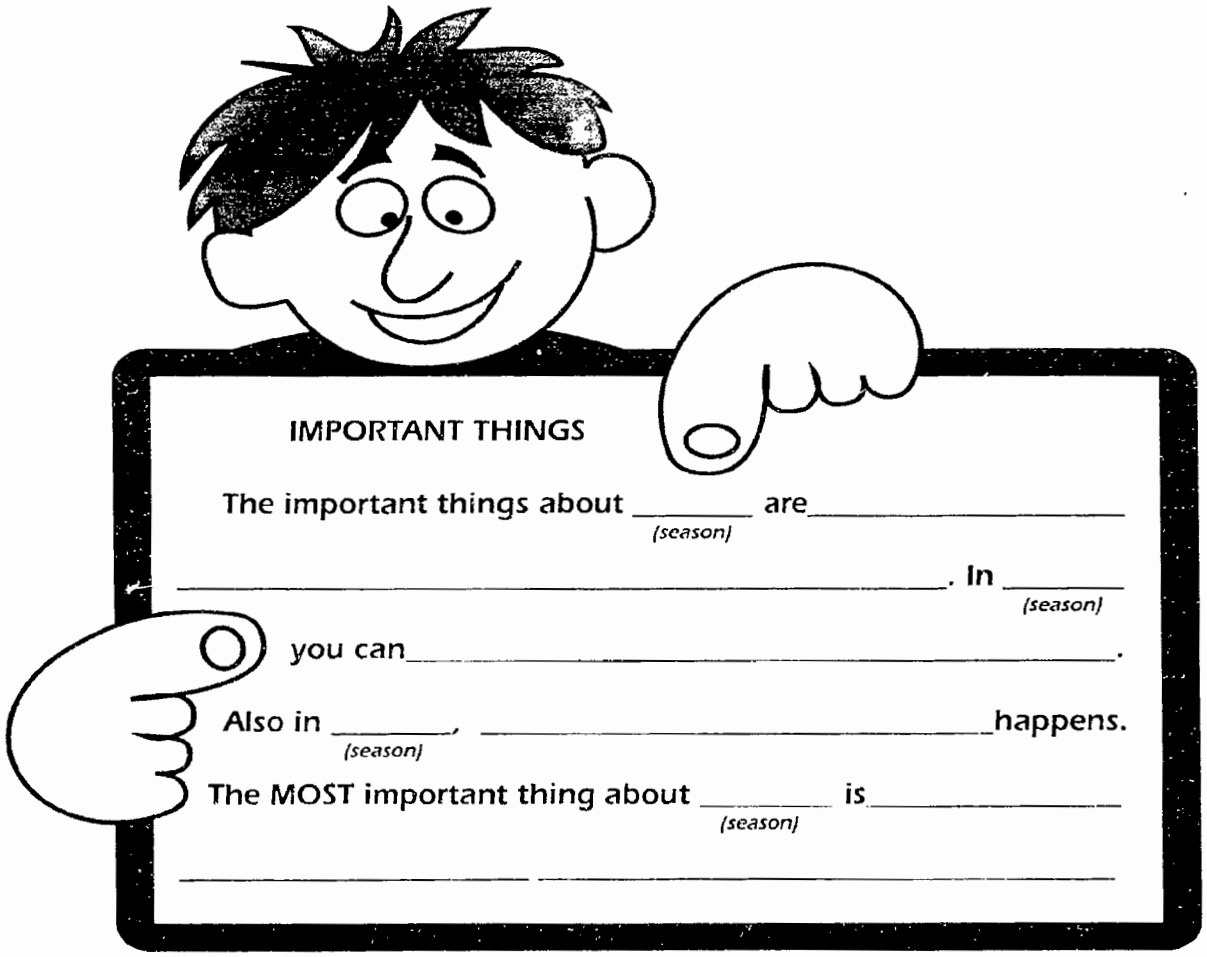
_____ _____
_____ _____

5. Write your *Cinquain* from the circled words. Edit and polish your cinquain. Illustrate your cinquain for the class book.

ACTIVITY 3

NAME _____

DIRECTIONS: Form four groups. Each group will become a season. That group will discuss everything that they can think of about their season. A recorder will write down all of the descriptive words that the group finds. Then, each group will write a book, telling about the "Important Things" of their season.



ACTIVITY 4

NAME _____

DIRECTIONS: Form groups and select a season to research and report about. All the information you write down will appear in a researcher's handbook, such as *The Winter Experts' Handbook.*

Ask the teacher to help you find some sources. Brainstorm with your group where to find other resources. Use as many pictures of each season to help illustrate your Handbook. If possible, include pictures and data from different regions and habitats.

THE WINTER EXPERTS' HANDBOOK OUTLINE

I. Animals
   a. How do they prepare for winter?
   b. Where do they live during the winter?
   c. What is their food source?
   d. How do they protect themselves from dangers?

II. Trees and Plants
   a. What happens to trees and plants?
   b. Describe and illustrate different trees and plants in winter.

III. Describe and Illustrate
   a. Hibernation.
   b. Winter Habitats.
   c. Birds in winter.
   d. Insects in winter.

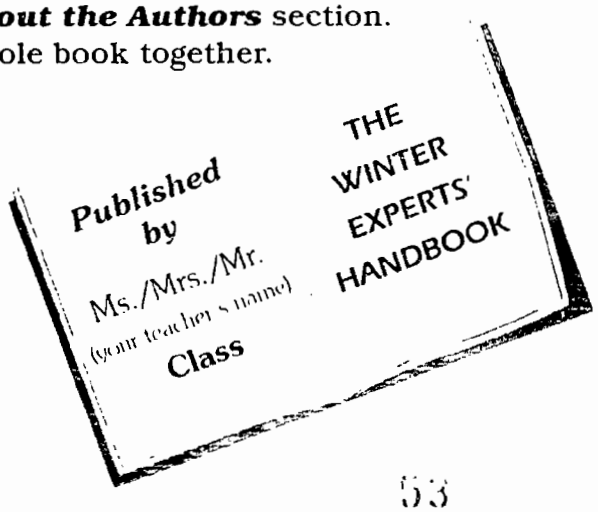
V. Most Interesting Animal
   a. Choose one animal.
   b. Tell about how it survives during winter.

VI. Make a ***Jacket*** for the Book.

VII. Write a ***Table of Contents.***

VII. Write an ***About the Authors*** section.

IX. Bind the whole book together.



ACTIVITY 5

THE WINTER SENTINEL

EDITOR-IN-CHIEF: _____
(your name)

BOOK FAIR FEATURES

Title: _____

Characters: _____

About: _____

DIFFERENT HABITATS STUDIED

Habitat: _____

Animals in this habitat: _____

Habitat: _____

Animals in this habitat: _____

SCIENCE PROJECT PLANNED FOR WINTER

WHERE DO BUTTERFLIES GO IN THE WINTER?

THE BEST THINGS TO MAKE AND EAT THIS WINTER

ANIMAL WINTER SURVIVAL SECRETS

Suggestions for Teachers

Activity 1

Work with the class to categorize the vocabulary.

Fall: colored leaves, falling leaves, acorns
Winter: sled, skiing, snow, mittens
Spring: blooms, new growth, nesting, showers
Summer: swim, splash, sand, picnics
(Add any additional terms that are relevant.)

Model writing an Acrostic Poem. Elicit terms from the class to complete a class season Acrostic Poem.

Activity 2

Complete directions appear on the Activity 2 page. Create a haiku poem with the class before having students develop one with a buddy or in a small group.

Activity 3

Brainstorm with the class. Ask the students to think about important facts about each season. Form collaborative groups to study different seasons. Float around the room to assist any groups when needed. On a chart, take dictation from students to complete one model of the Important Things frame.

Activity 4

This project is "mini-research." Be sure to provide safety nets, so the search for information will be successful. Place cards in pages directing students to find information easily. Provide numerous sources for each group. Accept the completed projects. Share each one with the class and with other classes.

Activity 5

The Winter Sentinel is an example of "newspaper" activities you can provide for each season. Article headlines would feature each season. These Sentinels allow students to record concise, explicit data or interesting facts to study; they may serve as an alternative to the Learning Log.

Unit 4:

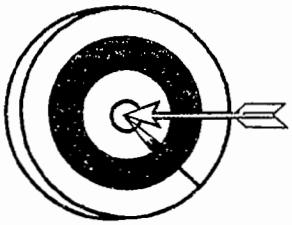
Do You Hear That?

I. Introduction: How the Theme Can Interest Students

We don't think much about what or how we hear until something happens that prevents our good hearing: a cold, water in the ear, or an earache. If you have a student who wears a hearing aid or who cannot hear at all, this unit is imperative. This kind of information is important for all children.

This is also a good time to teach some sign language. Teach students a message they could share with other classes. If nobody in your class wears a hearing aid, try to get a model of one.

II. Targeted Ideas



- There are many sounds all around us.
- Sounds occur when something vibrates.
- Sounds can vary in intensity. Some sounds are loud, some are quiet.
- Not everyone can hear all sounds.
- People use hearing aids to help them hear things more clearly.
- People who cannot hear use Sign Language.

III. Making Connections

In studying this unit you may want to refer back to Unit 2, *A POLAR ATTRACTION MYSTERY*, which will help children understand a part of the hearing aid. Other units relevant for this one because of the sounds associated with them are: Volume V, Unit 2, *SAFARI DOWN MY STREET*, Volume V, Unit 3, *COUNTRY COUSIN*, and Volume VI, Unit 2, *RAILS, WINGS, RUDDERS, AND WHEELS*. Each one deals with particular types of sounds.

IV. The Unit Theme: An Introductory Narrative to Read to Students

How We Are Surrounded by Sounds

Tweet! Tweet! Outside my bedroom window live a mother robin and her three babies. Every morning they wake me with tiny "tweet-tweets." I just love to hear that. And no matter how far away she is, mother robin hears her babies and comes to the nest. I wonder how she does that!

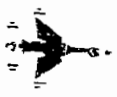
Mother says that the baby bird tweet-sounds travel in the air and reach the mother robin's ears. I can hear my mother calling me when I am outside playing. I guess her sounds travel to me too.

Outside I hear many sounds. When it's windy the trees blow around, and I can hear the leaves rustle. That is a soft sound. When the dog next door barks, I hear her too. That sound is very loud and harsh. Nellie sounds very angry when she barks a certain way. Everyone on the block can hear that loud bark. Nellie's voice travels, just as the baby bird's tweet does.

I decided to see how far my voice could travel. I ran into the garage and called to Mother. She heard me and came fast because she thought I was hurt. That's a mother for you. She and I went into the yard to find sounds. We have a big fence. Mother picked up a small branch and ran beside the fence with the branch rubbing the iron railings. That made a loud sound, and Nellie ran over to the fence to bark at Mother.

Then Mother ran across some gravel in the driveway. We heard a different kind of sound. The sound was crunchy, but not very loud. I remember making that same sound when I ran in the driveway. The pebbles of gravel rub against each other and scatter when that happens.

Before Mother had to go into the house to fix dinner, a huge jet airplane flew over our house. Boy! That sound was really LOUD! I could even "feel" that sound. I wonder why?



Later I told Dad about the sounds that were so different. He said sounds have different loudness, called *decibels*. You know

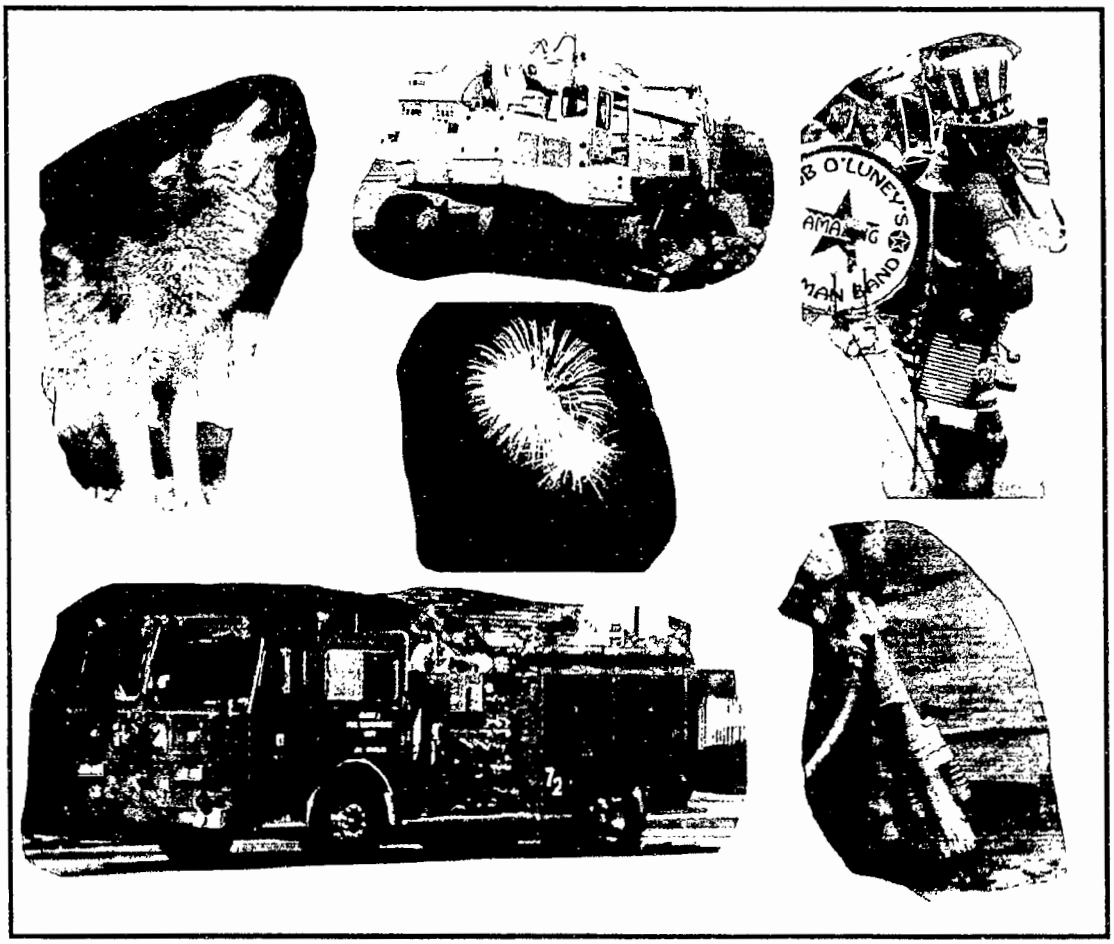
(continued on next page)

IV. The Unit Theme: An Introductory Narrative to Read to Students (cont.)

that a whisper is quieter than a scream, and a scream is much quieter than a jet airplane.

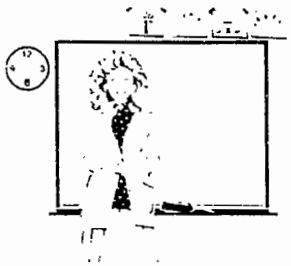
Which are the loudest and quietest sounds you have ever heard? I guess the loudest sound I've heard is the jet airplane. But thunder is very loud too, and scary. The quietest sound that I can remember is my baby cousin breathing. It was so soft and quiet. I know, because I stood beside the bed and watched and listened.

Now I listen hard for all kinds of sounds. It's fun to try deciding what made the sounds, where they came from, and how they reached me. You can do that too. Why don't you keep a Sound Diary for a few days? That's what I did. You will be surprised to know how many different sounds are all around, all the time.



A SOUND COLLAGE

V. How to Use the Theme: Procedures for Demonstrating its Functions and Involving Children



1. Questions to Pose About the Narrative

These sample questions are just a start; they may lead you to others that will help students focus on the essential information in this unit.

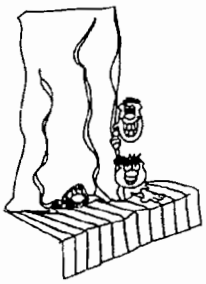
1. How are baby robins like human babies?
2. How is the narrator's mother like the robin mother?
3. Which sounds does the reading describe?
4. What kinds of sounds can people make?
5. What must we do to make sounds?
6. What are decibels?

2. Listening to Literature: A Sample Text and How to Use it

Fitzgerald, Rick. *Helen and the Great Quiet*

Helen is disturbed by what she perceives as a great quiet in the world. After a while she joins her family to listen to all the soft, gentle sounds around her.

Options for Student's Response.

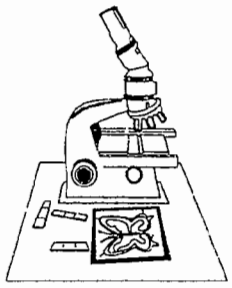


1. Write on the board: *What is a great quiet?* Ask the students to Think-Pair-Share. Then ask the class to get so still, so quiet that no sounds come from their classroom. Try to identify sounds that come from outside. List student suggestions on the board. The room will probably not be completely silent. However, the experience will act as a pre-listening motivator.
2. Elicit discussion about the book. What caused Helen to be concerned? Have you ever "heard" complete quiet?

Options for Student's Response (cont.)

3. Which sounds did Helen hear after she became quiet?
4. Compare sounds that Helen heard with the sounds that the students heard.
5. After reading the book, let students select from these choices:
   a. Illustrate the sounds they heard during the "great quiet" in the classroom.
   b. Listen for sounds you hear at home. Make a book about "Sounds at Home."
   c. Bring your book to class to share with a friend.

3. Science Demonstrations



1. Demonstrate experiments with sounds.
2. Study about the ear. How does the brain receive sound?
3. How do hearing aids help people who do not have normal hearing?
4. First listen to taped sounds. Then record sounds that students hear.
5. Use Ardley's *The Science Book of Sound* to make a sound box and wood instruments for experiments.
6. Use Taylor's *Hear! Hear! The Science of Sound* to make music using bottles.
7. Keep a Sound Data Log to record data from experiments.
8. Make Balloon Vocal Cords. See Activity #4.
9. Research the science of sound. Which scientists discovered that sound travels?
10. Research scientists who made discoveries about sound that enabled radio, TV, movies, medicine, and space exploration.
11. Create a time-line about the development of the science of sound.
12. Research medical developments about hearing devices and training.
13. Make a time-line about medical developments for hearing-challenged people.
14. Make a sound collage/mobile.

3. Science Demonstrations (cont.)

15. Have students close their eyes. Play various instruments. Students may identify each instrument and its class (brass, woodwind, percussion, string).

16. Discover nature's orchestra. Make a band: hitting two rocks together, blowing through blades of grass, scraping a twig on a rock, or shaking pebbles in a can.

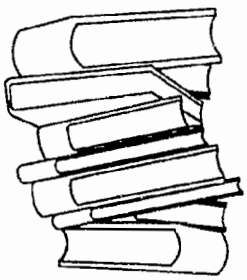
17. Listen to music tapes. Identify "pitch" by indicating HIGH or LOW sounds.

4. Math Demonstrations

1. Bounce and count. Students bounce a ball to answer a math problem. To illustrate 4 x 3, bounce the ball 4 times, then say, "Multiply the bounces by 3."

2. Research decibel ratings of various noises: stereo, TV, a barking dog, a car engine, and a siren. Plot the data on a graph.

5. More Books for Response



1. Koch, Michelle. *Hoot, Howl, Hiss*

Depicts sounds that animals make in the woods, by the pond, in the jungle, at the farm, and in the mountains.

2. Neasi, Barbara J. *Listen to Me*

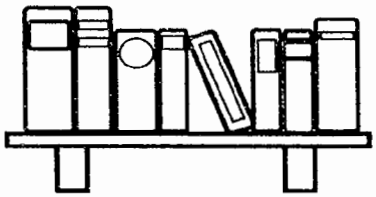
Whenever Mom and Dad are too busy to pay attention, Grandma saves the day by being a good listener.

3. Reddix, Valerie. *Millie and the Mudhole*

Millie the pig ignores the noisy warnings from other farm animals that she is sinking too far into a mudhole—until it is almost too late.

4. Stanley, Diane. *The Conversation Club*

Overwhelmed by his friends' Conversation Club, Peter Fieldmouse forms a Listening Club.



VI. Related Language Arts Activities

1. Listening and Discussion

- After reading a book, discuss all the sounds the story notes. Ask students to name common sounds they hear every day. Web the information. Ask them to categorize the sounds by type, pitch, loudness, softness, etc.
- Invite an ear, nose, and throat specialist to talk to the class about hearing.
- Listen to tapes of sounds: nature, house, playground, city streets. Identify each sound. Use the table in Activity #3 to record what students hear.
- Listen to and identify different musical instruments.
- Listen to peer reports about observations during the sound experiments.
- Pass out pictures about sounds. Where did people hear these sounds?

2. Individual and Group Writing

- Keep a journal about sound.
- Write a Sound Diary, using Activity #1.
- Write a skit about sound, explaining what makes sound travel.
- Write a Sound Story. Can you create sound?
- Create a Sounds Illustrations Book.
- Write an Onomatopoeia Poem. See Activity #2 for directions.
- Write a Sounds Book. Which sounds do you enjoy hearing? Illustrate each sound mentioned in your book. Share it with the class.

3. Reading

- Display several books about sound, have students select stories to read with a partner.
- Have students in small groups read books, then share their descriptions of the books.

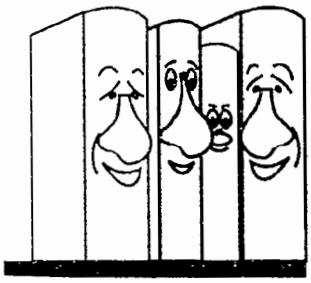
VII. Related Extension Activities: Using Language Arts to Teach Science in Personal or Small Group Work

1. Individual and Team Projects

- Have students Think-Pair-Share about sounds they hear in their neighborhood.
- Take a walk around the school. Take note off all the sounds you hear. When you return, write down all sounds that the students remembered. Then read the list to the class.
- Make a Sound Collage from pictures of objects that make sounds.
- Present skits about sound written by students.

2. Class Field Trips

- Visit a science museum.
- Visit a space museum.
- Attend a symphony concert.



VIII. Trade Books

Non-Fiction

Ardley, Neil. *The Science Book of Sound*

Brown, Craig. *City Sounds*

Darling, David. *Sounds Interesting: The Science of Acoustics*

Kettelkamp, Larry. *The Magic of Sound*

Podendorf, Illa. *Sounds All About*

Taylor, Barbara. *Hear! Hear! The Science of Sound*

Walsh, Amanda. *The Mysterious Hubbub*

Ward, Alan. *Sound*

Wood, Robert W. *Forty-Nine Easy Experiments with Acoustics*

Fiction

Fitzgerald, Rick. *Helen and the Great Quiet*

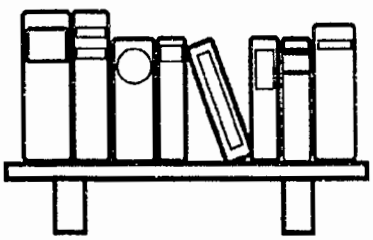
Koch, Michelle. *Hoot, Howl, Hiss*

Myller, Rolf. *A Very Noisy Day*

Neasi, Barbara J. *Listen to Me*

Reddix, Valerie. *Millie and the Mudhole*

Stanley, Diane. *The Conversation Club*



NAME _____

SOUND DIARY

	SOUNDS HEARD	LOUD	QUIET
DAY 1			
DAY 2			
DAY 3			
DAY 4			
DAY 5			

The loudest sound was _____.

I heard this sound at _____

_____.

The quietest sound was _____.

I heard this sound at _____

_____.

SOUND COLLAGE: Collect pictures of objects that make sounds. Make a collage of the sound items to keep in a Sound Diary.

ACTIVITY 2

NAME _____

VOCABULARY: hiss, quack, buzz, neigh, moo, woof, ticktocks, honk, fizz, tinkle

ONOMATOPOEIA POEM

A duck goes _____,

A snake goes _____,

I wonder what makes them sound like this.

A bee goes _____,

A horse goes _____,

What do you think they are trying to say?

A dog can _____,

A cow can _____,

What if an animal spoke like you?

A goose will _____,

A clock _____,

The sound it makes is the way it talks.

Tiny bells _____,

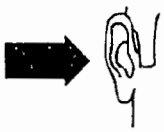
Soda bottles _____,

Each word sounds like the sound it is.

ACTIVITY 3

NAME _____

DIRECTIONS: Listen to the tape the teacher plays for the class. Identify each sound and put it in one of the categories.



SOUNDS WE HEARD

NATURE	HOUSE	PLAYGROUND	CITY
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

SOUND MOBILE

Collect pictures of the sounds that you heard on the tape. Make a mobile to display in the room.

ACTIVITY 4

NAME _____ _____

DIRECTIONS: Place two fingers on your throat while you make a humming sound. You can feel your throat shake, or vibrate. There are no vibrations when you are silent.

Inflate a balloon. Grip each side of its neck while stretching it sideways, to let air escape. The opening of the balloon is a rough model of your vocal cords.

Vary the amount of rubber that you pinch. You can vary the pitch of the sounds made by the balloon, making the sounds high or low, and loud or soft. Experiment with your balloon.

RESPONSE JOURNAL:

_____

_____

_____

_____

_____

_____

Could you "feel" the sounds vibrating? How? What did it feel like?

_____

_____

_____

_____

ACTIVITY 5

NAME _____

SOUND SOURCES: rainfall, rustling leaves, music, dogs barking, screaming voices, ordinary talking, singing, busy road traffic, a twin-engine airplane, loud thunder, a jumbo jet taking off, a gun, launching a spacecraft.

Which sounds would you LIKE to hear?

_____

_____

_____

Which sounds would you NOT like to hear?

_____

_____

_____

T-DIAGRAM

Wanted Sounds Attributes	Unwanted Sounds Attributes

Suggestions for Teachers

Activity 1

Go outside the classroom or walk around the neighborhood. Take paper and pencils to record sounds the class hears. Have students records sounds in the environment for 5 days. After 5 days, help students complete the Sound Diary page.

Activity 2

Using the fill-in exercise as an example, work with the class to produce a group onomatopoeia poem of sounds. Find two words that are onomonopoetic for the first two lines of the poem, then brainstorm the third line so that it rhymes with the second line.

Activity 3

Use a tape recorder to tape environmental sounds from nature, the house, the playground, and the city. Play the taped sounds to the class. Elicit discussion, then write the sounds they identify on a chart. Help students use the response sheet for taped sounds.

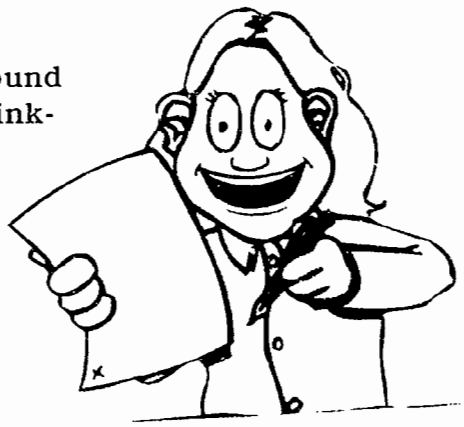
Activity 4

Use the chart to record the kinds of sounds identified. Provide a balloon for each child. Read the directions for making balloon vocal cords to the class. Demonstrate with your balloon. Elicit discussion from students about the experience. Have them write a response about the experience.

Activity 5

Ask students to describe sounds they like and dislike. Write down their preferences. Then read the list of sound sources on the page.

Pair students to categorize each sound according to likes and dislikes. Think-pair-share ideas about each sound. What attributes make sounds pleasant? What attributes make some sounds unpleasant? Complete the T-Diagram.



Appendix
A - E

APPENDIX A

LEARNING CENTERS

You may set up many independent or peer activities in special learning areas of the classroom. Identify each center by subject or purpose. For instance, a Science Center will contain materials for students to engage in experiments or gathering content information. A Reading Center engages students in reading activities.

How to Use Learning Centers

Learning Centers need to provide easy access and directions, so your students can use them successfully. Recorded directions help students who are not yet fluent readers. You can color-code some activities for easy access. The *Red Files* may contain activities for the students who are visual learners. The *Blue Files* may contain activities for those who learn best by listening.

Many unit activities are ready-made for Learning Centers. You can put the Activity Pages and lists of other activities in file folders there. Students can do these projects at the Learning Centers, either individually or with a buddy.

Scheduling Learning Center Time

The teacher must plan Learning Center time. One effective schedule places students at Centers on a rotation basis. While some students are with you for instruction, conference time, or reading/writing assignments, others pursue theme activities at a Learning Center. Here's a sample schedule:

8:15-8:45	Attendance, daily plans, sharing	10:15-10:30	Storytelling or free reading
8:45-10:00	Reading groups; other students in Learning Centers, or engaged in writing activities	10:30-11:15	Math groups; other students in Learning Center, or engaged in writing activities
10:00-10-15	Morning break	11:15-11:45	Lunch

You can plan a similar breakdown for the afternoon schedule. Try to schedule a 45-minute slot just for Learning Centers. You can circulate among those in the Centers to do some on-the-spot teaching as questions arise.

Management and Quick-Fixes

You must train your students to use Learning Centers efficiently. Allow no more than four or five students at a center at one time. Make sure that each student understands directions for activities placed there. Rotate jobs for each participant, so that the center can run itself. Jim may be the task master on Monday; the materials gatherer, Tuesday; the "voice monitor" (keep voices low), Wednesday; and so on. It helps to write each name and job on a card that you place at each Center daily.

Assessment Profile

The most useful type of evaluation or assessment of student learning is the Student Portfolio. A portfolio is a collection of student products and samples of work over time.

Each unit contains activities that result in products. Some of these products are: learning logs, literature responses, student-generated stories, poems, skits, songs, graphs, charts, illustrations, mobiles, murals, or dioramas, just to name a few. Not all samples fit into a folder. Keep a description or checklist that evaluates such products in your students' portfolio folders.

When you want proof of specific learning, interview each student or use some activity pages as assessment items. For specific facts or knowledge you require, selected response pages represent factual information. Student records and journal entries also demonstrate new knowledge. If you use some unit pages to assess learning, include a self-checking folder for your students.

Learning Center Guidelines

Learning Centers can be a valuable complement to your regular instructional activities: they provide another alternative for students to practice, explore, problems, and create. They also can help students to develop independence in managing their own learning.

Keep the following questions in mind as you begin to develop centers:

1. Does the Learning Center include a variety of materials which accommodate differences in learning styles?
2. Does it contain concrete, manipulative activities and paper/pencil activities? Is there a balance?
3. Does it contain some open-ended activities to encourage creative and original thinking?
4. Do the activities offer a variety of levels, to accommodate differences in ability? Are there activities at which all students can succeed? Are there challenging activities?
5. Are the activities self-checking and/or do the activities permit easy checking by you?
6. Does the student have a choice of activities to complete, or must the student do all the activities in the Center?
7. Does the Center include art, music, and literature?
8. Do the Center materials reflect diversity of gender, race, and language?
9. Are directions clearly stated and succinct?
10. Have you developed ways of keeping track of who has participated in the Center? Is the recordkeeping designed for the student to keep track of his/her progress in the Center?

11. Do the students have easy access to the materials?
12. Is the Center neatly constructed with appropriate printing/lettering?
13. Are the materials durable? Laminated? Have rounded edges?
14. Does the Center stimulate interest and further exploration?
15. Is there a unifying title or theme that appeals to students?

Setting Up a Center

Learning Centers will change with your content or theme. Before you begin a theme unit, decide which activities you will use; choose what to put in the Learning Centers accordingly. Put all materials in each Center that your students will need. The most essential supplies for each Learning Center are listed on the blackline master on the next page.

Essential Supplies for Learning Centers

Listening/Music Center

1. Tape recorder
2. Taped stories, poems, and songs
3. Supply of blank tapes
4. Headsets
5. CD Players
6. CDs
7. TV/VCR
8. Videos
9. Camcorder

Reading/Viewing Center

1. Relevant library books
2. Books on unit topics
3. Books made by students
4. Peer stories
5. Maps
6. Computer for reading files of work in progress, e-mail connections, and non-print media
7. CD-ROM drive and CDs (encyclopedia)
8. An Internet browser and other on-line connections
9. Printer
10. Film-strip Projector

Writing Center

1. Variety of papers: white, newsprint, scratch pads, legal pads, construction paper
2. Pens, pencils, crayons, felt-tip pens
3. Book-binding supplies
4. File folders
5. Paper Clips, stapler
6. Dictionary
7. Thesaurus
8. A list of idea starters
9. Expository and narrative writing samples
10. Pictures/Illustrations
11. Cartoon samples
12. Sample newspapers
13. Paragraph frame patterns
14. Computer for works in progress
15. Printer

Art Center

1. Construction paper
2. Scissors
3. Scotch Tape
4. String
5. Pens
6. Pencils
7. Colored chalk
8. Crayons
9. Tagboard
10. Poster board
11. Corrugated boxes
12. Mural/Bulletin board paper
13. Paint
14. Easel
15. Clay
16. Brads

Math/Science Center

1. Scales
2. Yardstick, rulers, measuring tape
3. Containers: measuring cups, spoons, bowls
4. Thermometers
5. Blocks
6. Graph paper
7. Aquarium
8. Egg cartons
9. Picture books and magazines
10. Cuisenaire rods
11. Math manipulatives

LEARNING CENTER ACTIVITIES

MAKE

1. Peep box of scene
2. Movie of paper or story
3. Mural of story
4. Puppet show
5. Picture of scene
6. Scale model
7. Map showing locations of story events
8. Book jacket with summary inside
9. Picture books
10. Fact/Data books
11. Illustrated journal
12. Flannel board story
13. Pictures of characters

DO

1. Dramatize a part
2. Pantomime a part
3. Show something new
4. Round-table discussion
5. Continue a story
6. Radio program
7. Eyewitness report
8. Give news flashes
9. Chalk-talk: tell a story
10. Perform a skit
11. Book chat

TELL

1. Summary of story
2. Interesting facts learned
3. Something new learned
4. Problem and solution
5. Interesting words and expressions
6. Story board

WRITE

1. Summary of data
2. Semantic web of information
3. Story
4. Skit
5. Acrostic poem
6. Newspaper article
7. Letters to authorities
8. Story starters
9. Tall tale
10. True/False book
11. Legend
12. Story board narrative

Learning Center Checklist

Presentation:

- ❑ unifying theme/art work
- ❑ colorful, attractively designed
- ❑ neatly assembled

Contents:

- ❑ age-appropriate, stage-appropriate
- ❑ variety of materials
- ❑ activities at varying levels (easy to challenging)
- ❑ incorporate various disciplines
- ❑ concrete/manipulative and paper/pencil activities
- ❑ some open-ended activities
- ❑ stimulates creative thought/interest
- ❑ free from stereotypes
- ❑ incorporates diversity
- ❑ provides for choice

Organization:

- ❑ clearly-stated directions
- ❑ directions appropriate for age/stage
- ❑ recordkeeping form included
- ❑ self-checking activities
- ❑ accessible materials

Construction:

- ❑ durable materials
- ❑ laminated
- ❑ rounded edges
- ❑ appropriate printing/lettering
- ❑ appropriate containers for activities

APPENDIX B

HOW TO MAKE AND USE BULLETIN BOARDS AND FILE FOLDERS

With limited space in classrooms today, you must find inventive ways to keep your students active and interested. The following two ideas may help you plan for the activities in these units.

Bulletin Boards

If your classroom has only one bulletin board, you may want to think about other ways to provide interactive boards. Large portable bulletin boards will provide two sides for work, and you can move them around the room as dividers. You can fold flannelboards and store them when not in use. You can paint large cardboard boxes from kitchen appliance or television stores; the four sides are usable as bulletin boards. Sides of file cabinets, doors, and spaces under chalkboards can also serve as working bulletin-board spaces. You can use window blinds for attaching materials, but be aware of the safety factor. Children's clothing can get caught if the blind mechanism begins to wind up.

While it may be too costly to laminate all the materials for the board, you will want to laminate any materials you expect to use again. If you are concerned about thumb tacks, velcro strips are good for mounting materials. Pellum, the material used for sewing suit interfacing, works well on flannelboards, and is cheaper than flannel or felt. Although adhesive tape will put things on the bulletin boards, it tends to tear the material when you take it off the boards. While there are commercial materials to use with the bulletin boards, you can be inventive in finding ways to accomplish the tasks of mounting materials on bulletin boards.

File Folders

You can make file folders from many different types of folders. Office supply stores have different forms to adapt for your own purposes. For instance, regular heavy paper folded in half can be fastened on both sides to become an envelope for holding materials. Colored folders allow for color-coding materials into subjects.

Accordion-style folders allow for more materials in the pockets. The notebook folder has pockets on each side of the opened folder, or places to attach papers in fasteners, to allow for book writing. More expensive folders are transparent plastic; you can use them repeatedly for many different themes.

Parents who work in offices may give you used file folders they would normally discard. They may also be able to provide materials for the folders. If you tell parents your themes for the next few weeks, they may be willing to make folders for your class. Parents often think of creative activities that may not have occurred to you.

It is important to laminate file folders so they will last after frequent use from many children. You can laminate with clear shelf paper found in grocery stores. Practice on some old papers, so you can learn to cover without creating air bubbles.

With a box or small crate for storage, your students can use these activities at their own desks or at a small classroom table. With boxes placed in Learning Centers, students will not waste time waiting in line to choose a file folder.

SAMPLE BULLETIN-BOARD/FILE FOLDER DISPLAY

Bulletin Board

TOPIC: Mystery Magnet

TEACHER:

1. Make sets of pictures and word cards of items that a magnet will and won't attract.
2. Place velcro strips on each card.
3. Make pockets for picture cards and word cards.
4. Place velcro strips in columns on the bulletin board.

STUDENTS:

1. Draw a card from each of the pockets.
2. Put each card under the appropriate side of the bulletin board.

Alternate Activity:
Students can expand this activity by adding more pictures to the collection.

WORD CARDS AND PICTURES:

1. tack
2. clip
3. hook
4. hat
5. can
6. ball
7. nail
8. coin
9. sock
10. football
11. shoe

File Folder

You can put this same project in a file folder. Place the cards on the corners of an open file folder. Paste the envelope to the back of the file folder, with the instructions on the front.

APPENDIX C

GLOSSARY

Accordion book: A book made by folding paper into an even number of sections.

Acrostic poem: A poem in which the first letter of each line forms a word, e.g.

Cuddly and cute
Always happy to see me
Tabby is her name.

Baggie book: A book made from putting several ziplock plastic bags together. Use any size ziplock plastic bags; cut plain or lined paper to fit into the bag. To bind, place the closed ends of the bags together, staple, then bind with colored plastic tape. Students can change contents of the book by removing pages and inserting new ones.

Bar graph: A graph which uses squares (or bars) to represent data.

Big Book: An oversized version of a book written with especially large text and illustrations. Print and illustrations can be easily seen by groups of children.

Bingo: A game for large or small groups, consisting of cards divided into sections. Each section contains a picture or word related to the theme being studied. You can also use a deck of cards with corresponding pictures or words. Each player has a card; the caller, using the large deck, calls the name of the picture or word. Students cover the corresponding picture or word on their cards. Play continues until a student has covered a row, column, or diagonal.

Chalk-talk: A technique for sharing a story which involves illustrating on the chalkboard while telling the story.

Collage: An artistic arrangement of various materials into a picture or design.

Concentration: A game involving matching pairs of cards, similar to Memory; especially useful for developing visual discrimination, sight word recognition, or number facts. Students shuffle the Concentration deck and place the cards face down; students turn over two cards and try to match the cards; if they match the cards, they keep the pair and get another turn. The winner is the student with the most pairs.

Concept book: A book focusing on a single idea or concept. Examples: a concept book of colors, size, shapes, time, machines, apples, etc.

Concrete poem: A poem written in the shape of the object/idea being described.

Contrast poem: A poem which contains two parts that show different aspects of the same subject. Example:

The Weather
The sun bright and yellow/ Shines in the sky.
Rain pours down/ From darkened clouds.

Diorama: A three-dimensional, artistic reproduction often constructed in a container of some sort; for example, a shoe box representing an animal habitat.

Dominoes: A matching game; players match small rectangular game pieces by placing them end to end.

Fact/Myth book: A book with a fact written on one page and a corresponding myth (untruth) on the facing page.

Fingerplay: A short poem incorporating hand motions.

Flannelboard: A board, usually rectangular, covered on one side with flannel or similar material.

Flip book: A book consisting of several pages which, when flipped through quickly, shows a sequence of actions.

Go Fish: A card game involving collecting "books" of matching cards. Students shuffle and deal seven cards to each player; the remaining cards are placed in a pile in the center. Students in turn ask the next player to "Give me all your _____," trying to make a book consisting of three cards. If students have the requested card, they give it to the other player. If they do not, they say "Go Fish". The player who must "Go Fish" selects a card from the center pile. Play continues until the winning player goes out first or has the most books.

Haiku poem: A Japanese form that addresses the seasons. Contains three lines of five, seven, and five syllables, a total of 17 syllables.

Interlocking puzzles: Puzzles whose pieces connect; especially helpful in developing visual discrimination, sight word recognition, and number facts.

K-W-L chart: A strategy to determine prior knowledge about a topic (What I Know); interest in the subject (What I Want to Know); and knowledge following instruction (What I Learned). At the beginning of a unit, the teacher records what the students already know about the topic, then asks what they want to know. The partially completed chart hangs in the classroom; at the end of the unit, the teacher records what students have learned.

Language Experience: Students participate in some kind of experience, either as a group or individually, and discuss the experience; then the student(s) dictate a story related to the experience. After hearing the story, students can do a variety of literacy activities with it: matching words in the story, illustrating words they recognize from the story, matching phrases, and so on.

Learning Log: A journal where students explore information they are studying.

Observation journal: A journal in which students record observed data.

Pictograph: A graph which uses pictures to display data.

Pocket chart: A large chart made of cardboard or plastic, which contains sections for cards or sentence strips.

Rebus recipe: A recipe which uses pictures instead of words.

Rebus story: A story which uses both pictures and words.

Rebus web: A brainstorming technique using pictures to represent ideas.

Semantic web: A brainstorming technique which uses words to represent ideas.

Sentence frame: Partial sentence used to prompt student writing, e.g., I like bears because _____. When I see _____, I feel _____.

Sequence strips: Strips of paper containing portions of a story; individual strips can be combined into a sequence.

Shape books: Books in the form of the topic being written about; e.g., books in the shape of animals, insects, fruits, vegetables.

Shared Reading Time: A time during the school day when the teacher reads to the students; as students become fluent readers, they can read to each other.

Shoebox sorter: A classification container. Partition a shoebox into sections according to the number of categories desired. Make corresponding cards for the theme being studied that students can sort into the shoebox.

Simon Says: A game of following directions. Caller gives directions; some begin with "Simon Says"; others do not. Students perform only those actions beginning with "Simon Says"; if they follow the directions that don't begin with "Simon Says", they are out of the game. To keep them involved, let the "out" students help you catch others who follow the direction without "Simon Says."

Single character cut-out: A child-size picture of a character from a story. It shows the body, but the face is cut out. Students hold the character cut-out in front of their faces while they retell or dramatize the story.

Storyboard: A retelling technique which uses pictures only; students illustrate portions of the story, then arrange the portions sequentially.

Tangrams: A set of seven varying shapes (five triangles, one square, and one parallelogram) are used to make many different forms.

Theme box: A container for props, costumes, and equipment pertaining to a specific topic or theme; useful for stimulating dramatic play.

Think-Pair-Share: Teacher pairs students to think about a concept and share their ideas on it.

Transparency story: Acetates (overhead transparencies) and erasable marking pens help students retell a story. Teacher writes the text from the story on the acetates; students draw a picture to accompany the text; then they sequence the illustrated portions and show them to the class with the overhead projector. As students become more fluent, they can write the text for illustrations drawn by the teacher.

Venn diagram: A graphic organizer consisting of two intersecting circles; used for comparing similarities and differences.

Web: A balloon drawn on the chalkboard that contains words, phrases, or images to be discussed and related.

Word bank: A collection of words for students to read. Write words on index cards and keep them in small containers (banks).

Word Wall: A designated wall in the classroom where words are posted that interest students. May relate to the theme being studied; useful to help students with spelling as they compose their own stories.

APPENDIX D

How to Make a Book

1. Select the type of book: traditional, modern, accordion, baggie, hinged cover, shape, pop-up.

2. Include these essential components:
   front cover
   title page
   dedication page (optional)
   story/content
   about the authors (optional)
   back cover

3. Attach book pages. The simplest way to attach pages is by stapling; however, there are other alternatives. Office supply stores offer a wide range of fasteners; you may find yarn, ribbon, string, or shoe laces at sewing stores. Pages may be glued to a backing of construction paper, then stapled together and covered. Pages may also be folded and glued back-to-back or stitched down the center. If your school has a bookbinding machine, you may attach the pages using spiral binders.

4. Attach cover. Choose materials that are durable or can be laminated. Possibilities are: tag board, mat board, cardboard, construction paper, cloth, wrapping paper, wallpaper (usually available free from paint/wallpaper stores), and contact paper. A variety of tapes for binding are also available: cellophane, masking, cloth, duct, or colored vinyl.

5. Helpful hints
   - Allow a margin on the left side of the paper before children start writing the story.
   - Cut cover pieces slightly larger than the writing paper; 1/4- to 1/2-inch is usually a good idea.
   - Sometimes you may wish to give a pre-assembled book to students; or you may want to give them individual sheets of paper. The latter is a good idea for children just beginning the process, since you want them to succeed in their story-writing endeavor.
   - It is easier if there is a straight edge on the side to be bound.

For additional ideas on making books, these resources might be helpful:

Evans, Joy and Jo E. Moore. *Making Big Books with Children*
Evans, Joy, et al. *Making Seasonal Big Books with Children*

APPENDIX E

TEACHER RESOURCES

Bittinger, Gayle, ed. *1001 Teaching Props: Simple Props to Make for Working with Young Children*

Boardman, Eunice. *Dimensions of Musical Thinking*

Johnson, Judi, ed. *The Educational Software Preview Guide*

Carle, E. *Animals, Animals*

Scholastic Books. *Poetry Place Anthology*

Neill, Shirley and George. *Only the Best: The Annual Guide to the Highest-Rated Educational Software: Preschool-Grade 12*

Prelutsky, Jack. *The New Kid on the Block*

Schiller, Pam and Thomas Moore. *Where is Thumbkin?: Over 500 Activities to Use with Songs You Already Know*

Silverstein, Shel. *Where the Sidewalk Ends.*

Wilmes, L. and More, D. *Everyday Circle Times*

Eliminate boredom—use theme units that emphasize language arts!

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ISBN 1-883790-37-9

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