TEACHER'S RESOURCE BOOK LEVELS K–2

ADVENTURE IN ENVIRONMENT

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TEACHER'S RESOURCE BOOK ✧ ✧ LEVELS K–2

ADVENTURE IN ENVIRONMENT

NEED

National Environmental Education Development

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for the benefit of the National Park Service

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Consultant
William B. Stapp, Ph.D.
Chairman, Environmental Education Programs
School of Natural Resources
The University of Michigan

Illustrator
Norma Erler Rahn

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PREFACE

Introduction

This resource book was written to help you *integrate* the concepts and values of environmental education into everything that you teach young children. As used in this book, the word *environment* includes everything that affects us—natural, social, cultural, technological, and perceptual—with the understanding that all these aspects of life are interrelated.

The NEED approach to environmental awareness is through thematic strands, or major concepts, that apply to everything and, like strands of rope, tie large notions about the universe into packages that can be easily recognized by children. The NEED strands apply to all environments and usually arouse curiosity in children.

Similarity and Variety. The likenesses and differences that occur among all living and nonliving things, conditions, and states. (A variety of function, size, and structure exists in plants and animals, rocks and stars, processes and people. There are sufficient similarities to permit people to draw up classifications of the objects, processes, etc.).

Patterns. Patterns of recurring or similar structure, function, behavior, or design of things living and nonliving, physical and abstract. (Some patterns are *organizational,* in that their structures are similar, as in some geological formations or animal social arrangements. Some patterns are *functional,* in that they result from some recurring process as patterns of weather and climate result from the structure of atmosphere. And some patterns are *spatial,* as it is from their design that the pattern emerges.)

Interrelation and Interdependence. The processes of interactions and resulting relationships that exist among all things. (Nothing can exist in complete isolation. Interactions occur among living and nonliving things due to their relationships in time, position, and energy. The deriving of energy by people from food is an example of interrelationship between two living things; the use of that energy to ride a bike is an example of an interaction between a living and nonliving thing.)

Continuity and Change. The dynamics of form, function, and style *in time* that exist among all things. (Continual change occurs with all living and nonliving things—changes of individual cells and whole systems of stars. Some changes seem to occur in cycles; some do not. Throughout all changes there run patterns of continuity, so that identities often continue in spite of changes—witness the aging of a man.)

Adaptation and Evolution. The process of continued survival, or failure to survive, of all things in terms of time (continuity and change) and interaction and relativity (interrelation and interdependence). (Over time, long range developments occur. As organisms change and are changed by their environments, heredity preserves elements of continuity. In a cultural sense, we may say that a particular skill changes, perhaps to meet a new need of society.)

The Strands Conceptual Approach is a way of viewing the web of life on our planet. The Strands, as interdisciplinary tools, make the interrelatedness easier to comprehend and include people as part of the environment and do not see them as opposed to nature.

In this book, we emphasize the direct—and suggest the indirect—relationships that exist between people's behavior and many of the conditions found on Earth. The concepts used (see list at the end of the preface) form the core of the lessons, and point out that people are the only species that can manipulate large segments of all environments and therefore are responsible for any harm they may inflict on the world. The concepts also indicate that many of our resources are nonreplenishable, except in spans of time only geologists and astronomers use. Because of this, even affluent citizens of our planet will not be able to continue to live in accustomed life-styles and at the same time maintain the highest values they have. The lessons and their activities help children see that, in a world teeming with alternatives, people must choose very carefully as individuals or in groups—whether their choices affect the purity of drinking water, how to spend a weekend, the selection of a career, and so forth.

Children in kindergarten through second grade usually do not make choices of the nature just mentioned. They do build attitudes and establish personal styles that make them *right now* the individuals they are becoming. They are storing images of people they would like to be like, and are noting, if only subconsciously, their traits; they are filing away scripts for roles they find appealing and might wish to consider for personal adoption later on. From their everyday experiences they are building inventories of what makes people important in our society, and of what our society's prestigious people consider important.

One of the aims of this book is to awaken or deepen environmental awareness within your children. The activities suggested interweave information and sensory experiences from *all* disciplines of elementary education curricula and demonstrate that everything is *process* rather than static *facts.*

Another aim of this book is to help fulfill the need of children to become *aware,* very early in their lives, of the possibility of other choices, other life-styles, than those most often in view. To do this we give exposure to the idea that life-styles can be successful because they are founded on personal integrity; the best scientific and socio-psychological information; attitudes that permit a lifetime of personal growth, discriminating thought and decision-making; a desire to enrich the quality of life for all people; and activism in various arenas of community influence.

The activities in this book emphasize experiential learning, both in and out of the classroom. Many simulation activities are substituted where direct experience is not possible. A complete list of all the activities may be found indexed at the end of the book.

Personal inquiry and discovery of basic environmental values and skills by every child is the hoped-for goal of all the lessons—what might be called the "Aha!" factor that helps account for the internalization of values and the commitment to carrying them out. From the first lesson, children are helped to realize that living on the planet Earth—essentially a closed system—is like living on a spaceship—a closed system—which is orbiting our sun, has limited resources, and is dependent on the sun for all its power.

The Strands Approach, as a way of not only seeing, but also listening, comparing, and helping to decide a course of action, can be a major aid to extending your children's intellectual, sensory, and emotional boundaries from environmental awareness to environmental understanding, and then to environmental commitment.

A matrix is provided in this preface which presents the Strands and the elementary curriculum areas. The boxes in this matrix indicate which lesson activities you might integrate into your regular curriculum so your children . . .

- will approach learning with zest and undertake it as fun,
- will perceive the world in expanded ways,
- will transfer their new knowledge and skills from school to home where it will make an immediate impact on society, and
- will begin to build attitudes that will enhance the quality of life around them.

INTEGRATION MATRIX

	SCIENCE	SOCIAL STUDIES	LANGUAGE ARTS	MATH	HUMANITIES (Art, Music, Dramatic Arts)
Strands	**Lessons**				
SIMILARITY/ VARIETY	1, 3, 6, 7, 9, 10, 17, 20, 25, 26, 27, 29, 31, 35, 38, 40	1, 2, 3, 9, 11, 19, 20, 21, 22, 25, 26, 27, 31, 35, 40	6, 8, 19, 25, 26, 30, 31	2, 7, 11, 19, 26	3, 7, 8, 9, 20, 21, 23, 25, 26, 40
PATTERNS	7, 15, 25, 26, 28, 29, 33, 36	4, 11, 12, 19, 21, 22, 25, 26, 33	19, 25, 26, 28, 29	4, 5, 7, 15, 19, 26	4, 7, 12, 25, 26, 28, 33, 36
INTERACTION (INTERRELATION)/ INTERDEPENDENCE	1, 5, 7, 13, 14, 25, 28, 29, 30, 31, 34, 36, 36, 37, 39	1, 12, 16, 17, 18, 22, 25, 31, 34, 36, 37, 39	8, 14, 22, 23, 25, 28, 30, 31, 36, 37	5, 13, 17, 18, 34, 36, 37, 39	7, 8, 12, 23, 25, 28, 36, 39
CONTINUITY/ CHANGE	3, 5, 6, 10, 13, 14, 15, 16, 17, 20, 27, 28, 33, 34, 36, 37, 38, 40	2, 3, 4, 10, 11, 12, 16, 17, 18, 20, 24, 27, 33, 34, 37, 40	3, 10, 14, 20, 36	2, 4, 5, 10, 12, 13, 15, 16, 17, 18, 19, 34, 37	3, 4, 12, 20, 24, 28, 33, 36, 40
ADAPTATION/ EVOLUTION	6, 9, 10, 20, 32, 33, 34, 35, 40	9, 10, 11, 20, 24, 33, 34, 35, 40	10, 20, 32	34	9, 20, 24, 32, 33, 40

Hints for Using the Resource Book

Concepts and Strands. The concepts in each lesson state the major ideas used to develop each lesson, whereas the strands state, in a general way, the framework of each lesson. It is left up to you, the teacher, to make the generalizations specific for your children. Concepts and strands are for teacher use only and are not to be read to, or memorized by, the children.

Performance Objectives. The performance objectives in each lesson are stated to aid the teacher in evaluating the children's understanding of concepts. They also provide help in evaluating the development of process skills, such as observing, describing, comparing, and predicting. The activities in this book are structured to allow each child to have the opportunity to participate in a variety of activities at his/her own level. Positive performance by the child should indicate that he/she is able to apply and integrate the expressed learnings. Performance objectives, which deal only with observable behaviors, provide only one way to evaluate the progress of each child. You may also become aware of other changes in individual children, including the building of attitudes, even though much of the attitude building will be undetectable.

Questions and Answers. Possible answers to questions presented in the text are printed in *italics.* Please treat all answers as suggestions only. If children's answers are very different from the expected response, invite the children to explain their ideas. Accept as many of their answers as possible and give praise for positive thinking. If necessary, use further questions to bring out the ideas you feel your children should be developing. Thus, by praising and questioning, you will develop a sensitive involvement in the child. Conversely, if you respond with "No, you're wrong" or "That's not right," the child will probably lose interest quickly and withdraw voluntary participation.

Developing Vocabulary. Provide opportunities for the children to have fun with some of the more

difficult words they experience as they participate in the lessons and activities. You and the children can write the words on the chalkboard, make a cumulative list on a chart, make labels for pictures and displays, keep a vocabulary notebook, draw pictures to go with the words, and play various games with them. Relate these words, in a fun way, to other situations in which the children are involved. Challenge the children to try out new words on their parents and brothers and sisters at home. Your concern at this level is not to have children memorize the words and their meanings, but to recognize and use the words in communicating about their new environmental awareness.

Activities. The activities in this resource book are arranged in lessons. Though each lesson could be taught exactly as written, it is not necessary that you do so. Indeed, the lessons are designed primarily to be examples, showing possible ways to organize the activities.

Each lesson includes a variety of activities from which you may select those suitable for your slowest to your most advanced children. The activities are designed especially for children. Avoid teacher demonstration as much as possible and let your children have fun as they become aware. Let each child have a chance to describe, compare, tell about, predict, discuss, poke, collect, handle, shake, draw, paste, walk and look, carry home the class booklet to show his/her parents, bring in a picture, bring in something necessary for an activity, and so forth.

Whether you work in small groups or large ones does not matter. What does matter is that each child actively participate, contributing to his/her own learning and to that of the group.

Equipment. The activities in this resource book have been written around real-life situations and do not need elaborate or expensive equipment. Most of the materials are already in your classroom. You and the children can easily collect other items from home or from the neighborhood. You might also ask parents to help in gathering some of the materials. Be sure you read through the lesson and materials list allowing enough time to collect the materials for the particular activity you choose. You might wish to set aside storage space for the materials that can be used over and over again in other activities.

Pictures, Pictures, Pictures. The illustrations in this book are meant for you to use in discussions with the children. Most of the illustrations are also included in the Duplicating Master Package that accompanies this program. If you wish, you might give each child a duplicated copy of the illustration to aid in discussion. Or, if your school has the equipment, you can make overhead projectuals of the illustrations and project them on a screen with the aid of an overhead projector.

Having your children collect pictures from many sources will enable them to participate in extending their own understandings and awareness. Let them help you sort, mount, and make a picture file of the pictures that can be used again and again with the lesson activities. In many of the lessons in this resource book, it is suggested that the children mount their pictures on large sheets of tagboard or posterboard as charts. Save these charts and use them from year to year as you develop similar activities in this book as well as in other curriculum areas.

Provide the children with picture books from the library for their classroom library corner. You might also want to subscribe to several magazines for your children, such as *National Geographic, Ranger Rick, National Wildlife,* and *International Wildlife.*

To help your children get the most from pictures, you can use a variety of motivating questions to stimulate their curiosity and get them to observe, compare, predict, and share their ideas. Try some of these:

- How would you describe this picture to someone who has never seen it?
- Is there anything in this picture that is new or surprising to you?
- Find another picture that is like this. How are they alike? In what way(s) are they not alike?
- Have you ever been in a place like this? What did you hear? What did you smell? What did you see?
- If you were in this picture, what would you do?
- Can you find the . . .?

Let the children ask one another questions about the pictures.

Going Outdoors. Class trips outdoors are also necessary times for environmental exploration and awareness. This resource book describes a variety of activities that you can do while on long walks (such as to the post office for a social studies lesson), on bus trips, and even on short trips (such as to the play-

ground or to the lunchroom). It is important for the children to realize that everything is part of the environment and affects it. Do plan to take your children outdoors often, for a walk to the corner, through their schoolyard, to the park, and through the community as you help them develop a positive attitude and awareness about their environment . . . it will be fun as well as rewarding.

Invite a Specialist to School. There are always thousands of questions the children ask that you cannot be expected to answer. Questions that cannot be readily answered from the resource materials around you can be written on cards and saved for the children to ask a specialist.

Plan to have a specialist visit your classroom every so often to talk with the children and answer some of their questions. A specialist can be a parent, the telephone repair person, a firefighter from your community fire house, the bus driver, the sanitation worker who comes to school to pick up the garbage, the zookeeper, the pet store owner, and so forth. These people will enjoy sharing their knowledge with the children and children are always excited by having someone visit them.

While the visiting specialist is in the classroom, have your children find out more about his/her job or profession by asking questions such as:

- Why did you decide to do this kind of work?
- How did you prepare for this job?
- What special area(s) of this job do you do?
- What do you find rewarding about your job?
- What are the problems of being in this job?
- Can you think of a special incident that has happened on your job?

Parent Involvement. This is a part of your curriculum you will especially want your parents to know about, talk about, and participate in. After all, we are hoping that environmental awareness and commitment will spread from the children throughout the school and into the community. To involve your parents as much as possible in ways that give them a positive feeling about their children's education, you might try some of these suggestions:

- Invite parents to act as aides when you take a walk or go on a trip.
- Involve parents in helping to collect materials for the activities.
- Send home stories, poems, pictures, and notes that the children prepare in class so they can share their learnings with the family at home.
- Tell your parents about this program at parents' night and let them know how they can be involved.
- Send a note home suggesting that parents point out various things to their children when they go on family outings or vacations.

You will find that your children's parents will become excited about the program, increasing their own environmental awareness. You might even hear a statement such as, "What John/Sue did in class last week sure helped the entire family become more aware of how we were treating our environment. We are being more careful about some of our daily routines, with the children reminding us and even suggesting other ways to do things!"

Duplicating Master Package. A duplicating master package has been prepared to accompany the resource book. You will find most of the book's illustrations reproduced on duplicating masters so that you can give each child a copy for discussion or activity stimulation. Many of the sheets have been prepared so that the children can check their understandings of the concepts, play a game, color, paste, follow directions, and take home a reminder to talk to their parents about their environment. Additional teaching suggestions have been included to give you ideas on more ways to use each sheet. This package will save you the time and trouble of preparing your own duplicating masters from the illustrations in the book.

Environmental Education Picture Packet. A set of 24 picture charts on 12 boards (18 1/2" x 23") was created to go along with the NEED program. The accompanying teaching suggestions manual has been written for children in levels 4–8, but the pictures can be used for discussion at any level. These charts have been keyed into each of the lessons in the book and will be found at the end of the Suggested Resource Materials section of each lesson. The packet is not essential for teaching the activities in the resource book, but it can help you expand and supplement the discussion and activities in each lesson.

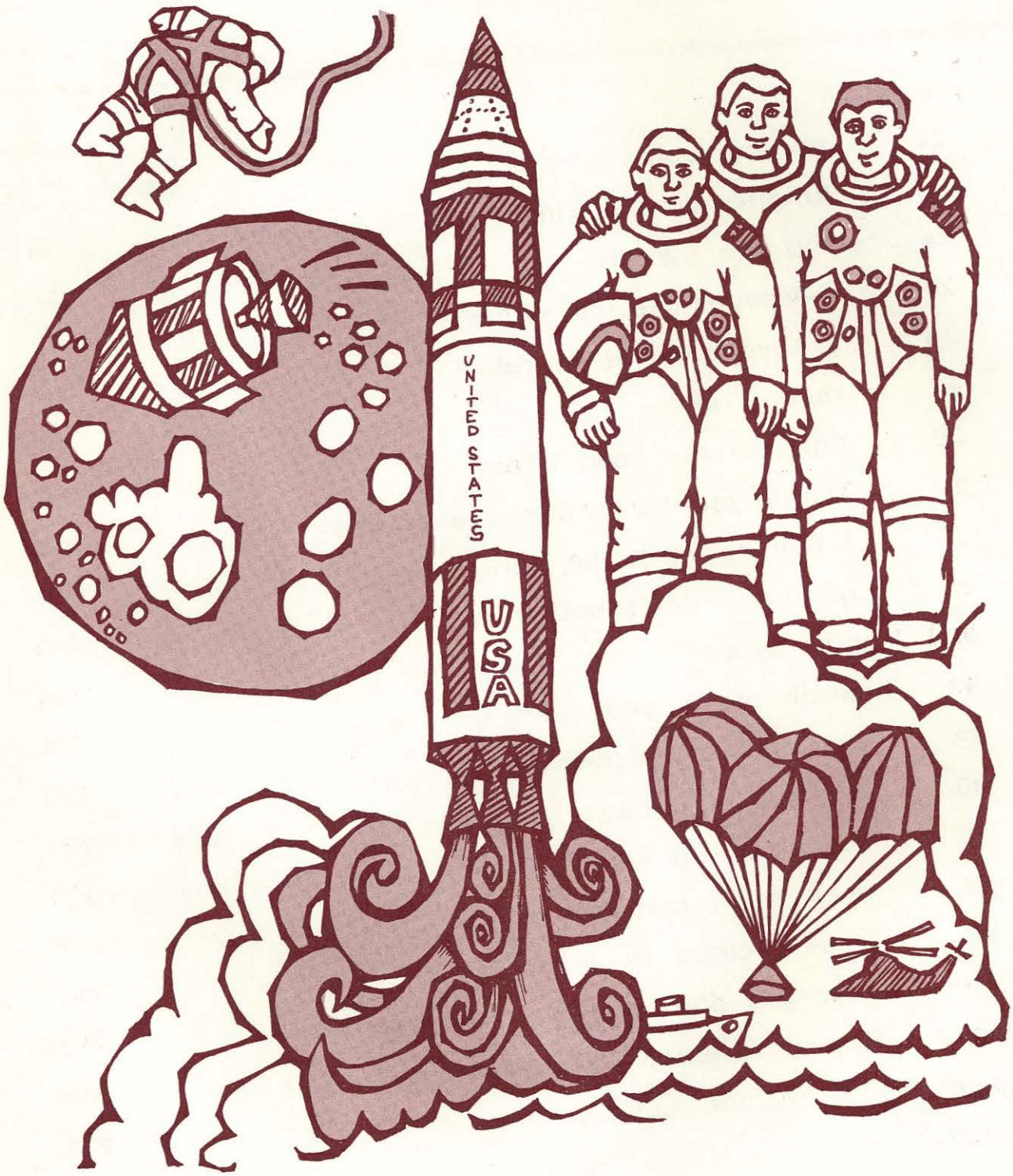
Filmstrips. A list of filmstrips has been provided at the end of the book to aid you in supplementing and expanding the lessons.

CONCEPTS

- People have certain basic needs that only Earth supplies: air, water, food, warmth, and land.
- Earth contains all the air, water, and land that people will ever have.
- People are responsible for their use of Earth's provisions.
- All living things interact with (help, hurt, or depend upon) other living and nonliving things in their environments.
- Some animals help each other.
- Animals, including people, communicate as one means of controlling, sharing, or more fully enjoying their environments.
- Over many, many years, animals have developed different kinds of protective characteristics, such as color, strong leg muscles, sharp eyesight, and "armor."
- Green plants make the food and oxygen that people and other animals need to live, thus becoming part of the food web.
- Animals, including people, are part of the food web.
- The dead bodies, as well as the wastes, of animals and plants decompose and again are available to producing plants.
- Every animal and every plant has a place to live called its habitat.
- All animals reproduce young like themselves.
- Too many people, or too many of any kind of animal, living in one place can lead to crowding.
- Sudden or long-lasting disturbances in the home communities of people or other animals may cause them to leave or to die. Sudden or long-lasting disturbances in the home communities of plants may cause them to die.
- The many different people in the world have many different ways of living with their environments.

- People can learn which actions destroy and which actions build up their homes and communities.
- Animals, including people, move in many ways, such as walking, flying, swimming, and being carried.
- People can change how they interact with their environments.
- The more people there are, the more food and water they need.
- The more people there are, the more houses and heat they need.
- The more people there are, the more energy they need.
- The more people there are, the more trash and garbage there is.
- The more people there are, the more clean air they need.
- Because there are more and more people on Earth, because Earth's resources are not limitless, and because more of everything is needed to meet all these people's basic needs, it is necessary to recycle as much as possible.
- People have other needs that should be fulfilled after basic needs are met. One of these needs is other people.
- People have other needs that should be fulfilled after basic needs are met. One of these needs is beauty.
- People have other needs that should be fulfilled after basic needs are met. One of these needs is meaningful work.
- People have other needs that should be fulfilled after basic needs are met. One of these needs is learning.
- People have other needs that should be fulfilled after basic needs are met. One of these needs is fun.
- Each person must examine how he or she lives to decide whether he or she helps build or destroy the environment.

CONTENTS


UNITED STATES
USA

three, two, one . . . blast off!

1

CONCEPTS

People have certain needs that only Earth supplies: air, water, food, warmth, and land.

Earth contains all the air, water, and land that people will ever have.

People are responsible for their use of Earth's provisions.

Because there are more and more people on Earth, because Earth's resources are not limitless, and because more of everything is needed to meet all these people's basic needs, it is necessary to recycle as much as possible.

Animals, including people, communicate as one means of controlling, sharing, or more fully enjoying their environments.

STRANDS

Since humans first populated Earth, their basic needs for continued life have been *similar:* air, water, food, etc. People still must *interact* with their environments and live in a system of *interdependences* with other living and nonliving things. However, the possibilities of people living more *varied* lives have multiplied as various forms of these *interactions*—including verbal communication—have become more complex and widespread.

PERFORMANCE OBJECTIVES

The child will be able to . . .

- List those basic things necessary for human life
- Describe in simple terms a closed life-support system
- Begin to understand the necessity of recycling limited resources

MATERIALS

for the Lesson Capsule: material for making a space suit ⌗ long extension cord or piece of clothesline ⌗ motorcycle helmet with visor or a football helmet ⌗ several shoe boxes ⌗ felt-tip markers ⌗ drawing paper ⌗ space pictures collected from old newspapers and magazines ⌗ materials for mounting and displaying space pictures

for Extension Activities: none

LESSON CAPSULE

A. Help the children collect space pictures from old newspapers and magazines. Try to find pictures of both exteriors and interiors of spaceships, astronauts in their space suits, and astronauts floating in space and walking on the moon. Help the children mount and display their pictures so that they can be used in later discussions and activities. Have the children look at their picture collection; then talk with them about what they see in the pictures and what the pictures imply. Try to bring out and expand the following ideas in your discussion.

- When walking on the moon, the astronauts must wear their space suits and space helmets. (*These supply oxygen for breathing and the weight that the astronauts need in order to overcome the problems of having no gravity and keep from floating off the moon; they also act as a shield against the terrible glare and heat of the sun.*)

- When walking in space outside their spaceship, the astronauts need to use a tether line. (*The tether provides the astronauts with the air they need to breathe; space is not "air" as we know it on Earth.*)

- In the spaceship, the astronauts float about unless they are strapped into their chairs. (*Outside Earth's atmosphere, humans become "weightless" because gravity is no longer operating on them. Hence they float around like feathers in the air.*)

- The astronauts must take with them *everything* they will need, such as food, air, and water, for the time they are away from Earth. The spaceship becomes their entire world, except for the communication they have with Earth. (*The spaceship is called a "closed system" because it contains* everything *necessary to life. Our planet, Earth, except for the sun, is also a closed system.*)

B. Select two children to be astronauts. The rest of the children can become the NASA ground crew that maintains radio contact with the astronauts once the spaceship is in flight.

The objective of this activity is for the NASA crew and the astronauts to work in harmony to get the spaceship and its occupants from Earth to the moon while concentrating on keeping the astronauts alive. You, as the Chief of the NASA ground-control

crew, can help the children in their decisions as to how they might best help the astronauts.

Help the children design and make two space suits, improvising from materials found in the classroom and at home. A disguised football or motorcycle helmet can become the astronauts' headgear. If the children are interested, you may wish to make a more detailed space suit. For example, you might affix gloves at the wrists of the suit and heavy boots at the bottom of the trouser legs. Have the children look carefully at pictures of astronauts so that they can get more information about space suits.

Now have the children discuss what they think is needed in the way of communication equipment for keeping in touch with Earth. Be sure the children understand the importance of continued communication between the spaceship and NASA back on Earth. Have the children construct a Classroom Communication Center to help them role-play the part of NASA. They may use felt-tip markers to draw dials, knobs, etc., on shoe boxes to represent the radio consoles NASA might use to keep in touch with a spaceship. One of the boxes can become the radio in the spaceship.

Now divide the classroom into three areas. One area will represent Earth, another the launching site for the spaceship, and another the moon. On the launching site, have the children build a spaceship and name it. Any materials available will do for making the spaceship, even rearranged desks and stacked chairs. The surface of the moon, or backward view of Earth as seen from outer space, can be illustrated by children's drawings and hung in appropriate places.

C. It is almost time for the astronauts to be on their way to the moon, but before launching the spaceship the children should discuss what the astronauts' needs will be when they are in space. Can the astronauts get these supplies from space, and if not, how can the ground crew provide for their needs before the trip begins? You may wish to ask each child what he/she thinks the astronauts should take along with them. The children should be reminded that there is very limited room on board the spaceship, yet the astronauts will be gone for five days. Discuss the necessity of each item as it is suggested.

After dressing the astronauts appropriately for the trip, send them on their way. Let the children provide the sound effects for the blast-off.

The astronauts should be instructed by a member of the NASA crew to stay in contact with NASA and to report how supplies are lasting. They should also be instructed to report anything that goes wrong. For example, the astronauts might gasp for breath if enough air doesn't get through or faint from lack of food. Each time the astronauts have trouble, they must work with NASA to solve the problem. If the problem cannot be solved in space, the astronauts must return to Earth and be rescued at sea. Then new astronauts should be selected and another spaceship sent on the Moon Mission.

Discuss with the children the reasons for the spaceship's failures. Were some of the supplies used up too fast? Do supplies need to be used more than once—that is, do they need to be recycled? Which supplies *can* be recycled? Whose responsibility is it to get the astronauts to the moon, the astronauts' or NASA's?

After a successful round trip has been made, discuss the astronauts' triumph. The most important part of the discussion should center on how Earth is like a spaceship: Earth has all the air, water, etc., it will ever have.

EXTENSION ACTIVITIES

A. While the children are role-playing the parts of astronauts and the NASA ground crew, they will become aware of how vitally important communication—the exchange of words—can be. Explain to the children that talking with one another is one important way to *communicate*—that is, to be able to exchange thoughts, ideas, and feelings with another person. Ask the children why *they* think people want to communicate with one another. Their answers probably will be quite specific, but you can help the children expand these to generalizations, such as people communicate in order to ask questions or to give information.

B. Help the children think up some situations in which telephone or radio communications would be exceedingly important. You might begin by suggesting that the children develop and act out the following or other situations of your choosing.

- A man and his two dogs live alone on an island that is many, many miles from other people. Their food supply is getting very low.

- A sailboat, with two passengers, is lost several miles from shore.

Help the children think up some other situations in which telephone or radio communications would be extremely important.

C. Ask the children how they think we can communicate with one another *without* using words. Do they think that looking straight into the eyes of another person is communication? How about smiling at someone? nodding at someone? waving to someone? Does patting someone on the shoulder qualify as communication? What about holding hands? sharing an apple or a piece of candy? What about a sock on the arm? Let the children discuss these and suggest as many other ways of communicating without the use of words as they can.

SUGGESTED RESOURCE MATERIALS

books for children:

Branley, Franklin M. *Weight and Weightlessness.* New York: Thomas Y. Crowell Company, 1971.

Freeman, Mae. *Space Base.* New York: Franklin Watts, Inc., 1972.

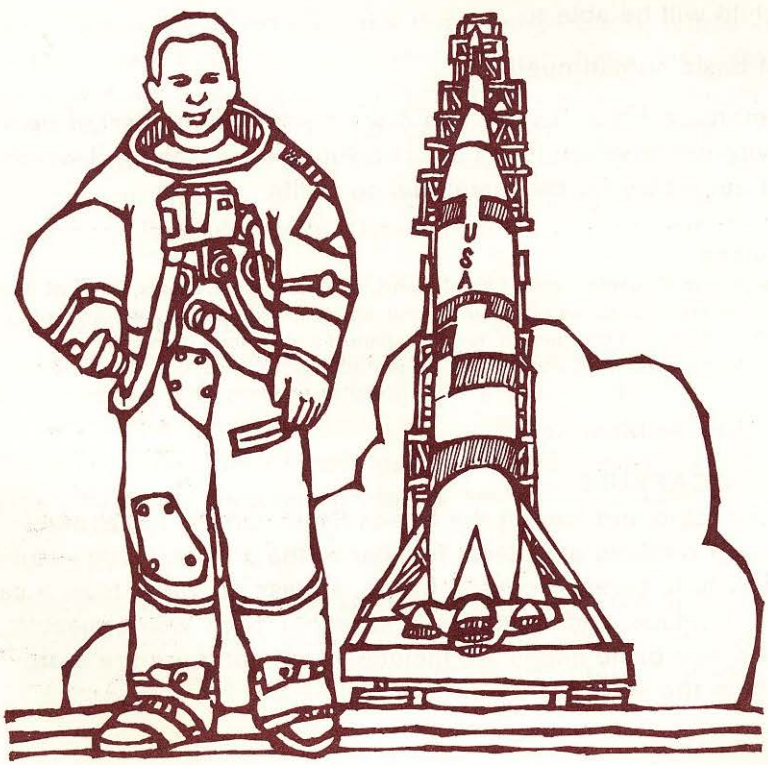
Fuchs, Erich. *Journey to the Moon.* New York: Delacorte Press, 1969.

books for the teacher:

Hyde, Margaret O. *Off into Space! Science for Young Space Travelers.* New York: McGraw-Hill Book Company, 1969.

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N. J.: Silver Burdett Co., 1971. (Charts 2,7,14)



2 make mine basic, please

CONCEPTS

People have certain basic needs that only Earth supplies: air, water, food, warmth, and land.

Earth contains all the air, water, and land that people will ever have.

People are responsible for their use of Earth's provisions.

STRANDS

Humans have certain basic needs that require fulfillment for the *continuance* of life. People have learned not only how to use Earth's natural resources to fulfill these life-needs but also how to use those resources to fulfill their desires for *variety* and convenience in living. As the application of this knowledge has increased, the values of our society have *changed,* so that now it is often difficult to distinguish basic necessities from luxury items. This is unfortunate for human and other animal life because Earth's resources are not limitless.

PERFORMANCE OBJECTIVES

The child will be able to . . .

- List basic human needs
- Demonstrate that he/she can discriminate within his/her own environment which items are absolutely necessary and which are not necessary for the maintenance of life

MATERIALS

for the Lesson Capsule: various small items, such as cereal, books, glass of water, packet of seeds, plastic bag containing soil, small electric heater, and any other items that relate to basic human needs ⌑ pictures of various items, including one each of things relating to water, land, air (outdoor picture will do), food, fire (heating device)

for Extension Activities: none

LESSON CAPSULE

Set up a table and label it the Needs Store. On the table, place objects or pictures of objects familiar to the children. Such objects might include cereal, books, a house, a glass of water, toys, a car, milk, a fireplace, and cows. Make *sure* that items which meet peoples' five basic needs are included and that there are more objects in the store than there are children.

Ask children to play the parts of a cashier, a salesperson, and five need-experts. You may wish to have the children make placards indicating the roles they are playing. You should play the role of arbiter among the need-experts. The cashier might go behind the counter and the salesperson outside the door, but the five need-experts should sit together as a group. Give each of the five need-experts a picture indicating one of the basic human needs: food, water, warmth, land, and air.

The salesperson knocks on the door and then enters the room, greeting the customers (the remaining children). He/She explains that, at *this* store, you can purchase anything you see but can take back with you only those items that *you need in order to stay alive.* The salesperson then asks for a child to volunteer to make a purchase in the Needs Store. A customer goes up to the counter and is reminded that he/she can buy only something that he/she *must* have. The child alone makes the decision about what to buy. He/She makes the purchase and takes it to the group of need-experts for their approval. The child should choose the appropriate need-expert to evaluate his/her purchase. For example, if the child chooses to purchase a carton of milk, he/she should choose to take his/her purchase to the expert who has been assigned to evaluate the basic human need "water." If the expert agrees that the purchase represents the basic need of the buyer, the item is handed back to the buyer, who can return to his/her desk with it. However, if the need-expert does not think the purchase fulfills any basic human need, the buyer must return the purchase to the store. In cases where the need-expert's judgment is in error, you might guide the five "experts" in a brief discussion until the correct decision is made. Depending on the abilities of your children, you may wish to "run" the children through one simple purchase so that they will get the idea of what is expected.

EXTENSION ACTIVITIES

The preceding activity may be extended for more advanced children by adding any one or several of the following.

A. For several days prior to this game, ask children to bring in and collect items and pictures of various items to be sold in the store.

B. Have brief discussions for several days prior to the activity to help children find out more about the five basic needs of people. When discussing "warmth," you may wish to talk about clothing

and shelter as well as home heating. Help the children differentiate between basic necessities and luxury items for living.

C. Let the children price the items before the activity begins. When the activity is over, you may wish to have the children reprice the items according to what they then think are the most important objects offered for sale.

D. Have the children discuss the fact that Earth has always provided everything necessary for human life and that it will continue to do so, but at *its* rate of speed, not that of people. For example, discuss the fact that it takes millions of years for Earth to create oil. Ask the children how they think this might influence how we live today.

E. Some children may enjoy tracing store items back to basic natural resources. They may wish to present their ideas in a chart or scrap book.

SUGGESTED RESOURCE MATERIALS

books for children:

Howell, Ruth. *Splash and Flow.* New York: Atheneum Publishers, 1973.

books for the teacher:

Fenton, Carroll Lane, and Herminie Kitchen. *Plants We Live On.* New York: The John Day Company, Inc., 1971.

Fuller, R. Buckminster, Eric Walker, and James R. Killian, Jr. *Approaching the Benign Environment.* New York: Macmillan Publishing Co., Inc., Collier Books, 1971.

Segerberg, Osborn, Jr. *Where Have All the Flowers, Fishes, Birds, Trees, Water, and Air Gone? What Ecology Is All About.* New York: David McKay Company, 1971.

Van Sickle, Dirck. *The Ecological Citizen.* New York: Harper & Row, Publishers, 1971.

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N. J.: Silver Burdett Co., 1971. (Charts 1,4,5,6,7,11,14,20,21,24)

let's look at a plant

3

CONCEPTS

Green plants make the food and oxygen that people and other animals need to live, thus becoming part of the food web.

People have certain basic needs that only Earth supplies: air, water, food, warmth, and land.

Animals, including people, are part of the food web.

All living things interact with (help, hurt, or depend upon) other living and nonliving things in their environments.

STRANDS

The energy for all life begins in our sun. It passes to humans and other animals through green plants, which *change* it into food. The *varieties* of food thus manufactured in plants' continuous cycles provide exactly what is needed by all animal life that eat them. Although there are many thousands of *varieties* of plants that serve as food, these plants have many *similarities* in their parts and processes.

PERFORMANCE OBJECTIVES

The child will be able to . . .

- Name the primary parts of a plant
- Indicate the functions of plants and their needs
- Make simple comparisons between plant and human needs

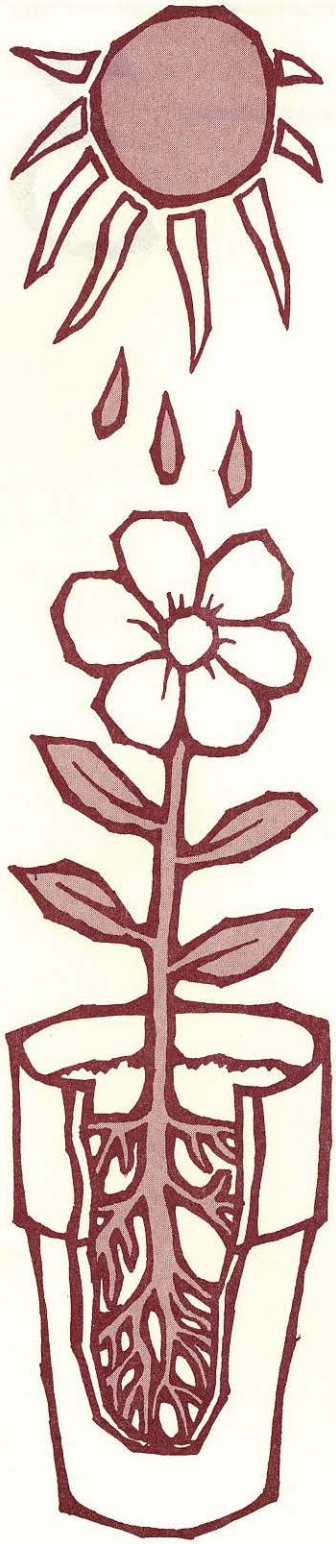
MATERIALS

for the Lesson Capsule: a few inexpensive plants

for Extension Activities: drawing paper ⌗ crayons ⌗ a few plants

LESSON CAPSULE

A. This activity introduces the concept of "plant" and the basic elements necessary for its growth: good soil, water, sunlight, air, drainage. Bring into the classroom a few inexpensive plants and talk about their structure. Let the children look at them closely and feel them very gently. Ask what they see in the way of color and structure. Now ask what the children feel in the way of texture.



Have one or two children draw a picture of a plant on the chalkboard. Ask them to make their drawings as complete as possible and to include all the plant parts they can think of. Ask the other children what plant parts they can identify—a stem? roots? leaves? Print the names for these next to the corresponding part on the drawing of the plant. Ask the children to imagine what the different parts might be used for. Then have them make a drawing of a plant on drawing paper. They may copy the names of the plant parts from the chalkboard.

Talk about the plant's greenness, and the fact that green plants are the *only* living things in the world that make their own food (exception: a few bacteria that, without chlorophyll, are still able to create their own food chemically. Young children won't need to know this yet).

Explain that the "greenness" of plants is due to the fact that they contain a substance called *chlorophyll.* The children may be familiar with this word, since it is often used in television toothpaste and chewing gum ads; if they aren't, help them have fun saying it. Talk about the fact that the energy the sun sends plants through its rays combines with the chlorophyll, carbon dioxide, and water to make food. And because of this, all animals, including people, can live.

Ask the children to name any plants, including fruit, that they might have brought that day in their lunches. Children who buy their lunches might discuss the foods they had the day before. You might provide the children with magazines that contain pictures of food. Ask them to draw or cut out pictures of those types of food that they have discussed. As the children note the varieties of foods, they should become aware that many of the foods they eat are plants.

B. Tell the children that they are going to take an imaginary trip to a farm and watch a farmer try to grow some plants. They are to pretend they are Plant Inspectors. The children may give the farmer a name, such as Farmer Brown, and talk about what the farm might look like, what kinds of animals are there, and what is grown there. You may play the role of Farmer Brown and begin by performing various actions associated with planting a row of beans. Verbalize the farmer's thoughts as you do so that the children can follow your line of reasoning. Tell the children to watch closely to see how you plant green beans, but deliberately do the wrong things. For example:

- Plant one seed in a pail of water. Farmer Brown can say that one must give a plant all the water one can or it won't grow.
- Plant a seed in some sand, saying that the sand will hold the seed in the ground.
- Plant a seed in a sheltered spot, explaining that plants have to be protected from the sun. Plants *can* get too much sun, of course, if there is not enough water; however, sunburn is not a problem as it can be with humans. This might be the point you try to get across.

As you are planting the beans, the Plant Inspectors should raise their hands if they detect that something is wrong. The Plant Inspector should say, "If you want your plants to grow, there is something you should know." Then the child should tell you what he/she thinks you have done wrong. The farmer (you) and the inspector (the child) should discuss the problem. The farmer should act very interested in the inspector's ideas but must defend his/her actions. If the child is stumped, he/she may call for aid from his/her fellow inspectors. Give the inspector challenging, but clear, arguments that make him/her think. *Make sure* the child is aware that you are *not* necessarily telling the truth. After role-playing with various inspectors, ask the children to state exactly what they think a plant needs in order to grow and produce food. Help them list these with both words and symbols on the chalkboard.

Ask the children if they remember what the needs of humans are as stated in the lesson Make Mine Basic, Please. Then ask if they think plants have any of the same needs.

C. You might end the lesson by having the children make a Plant Needs booklet. They should include in their booklet the picture they drew of a plant. If they have not already done so, ask them to label the parts of the plant. On another page, ask the children to draw the symbols and write the words that tell the needs of the plant. If the children want to be artistic, they may arrange these needs symbols and words on the page around a picture of a plant. They may then title the page "Plant Needs." Other pages might include

pictures of foods cut from magazines, along with the name of the accompanying plant from which each food comes.

You may wish to have the children write a story, incorporating all the things they have talked about in this lesson. This could be a final insert in their booklet. Of course the children will want to make and decorate a cover for their booklet. Encourage the children to share and display their booklet and finally to take it home to discuss with their parents.

EXTENSION ACTIVITIES

A. Have your more advanced children draw a picture of a plant that includes as many parts above *and* below the soil as they can think of. Then ask them to list the things a plant needs in order to grow. Ask for volunteers to display and discuss their drawings. Ask the children to compare their versions, and through discussion come to a consensus on the major parts and needs of a plant.

Have someone draw a final version of a plant on the chalkboard or on chart paper. The children can then add to their own drawings any items that they might have forgotten. As they discuss and label their drawings, help them make a list of any new words that they find as a result of this activity.

B. You may wish to review the lesson Make Mine Basic, Please, as it relates closely to this one. Were there any plants in the Needs Store? How are the children's needs like those of the plants? How do their needs differ?

Start a discussion of the problems of pollution. You might begin by stating, "We found that we need clean air, and plants also need clean air." Do the children think there is something their community might do to help make air cleaner? What about water and land, such as an open dump? At the very least, the children can begin to understand that plants and humans both belong on Earth and that they share some basic needs.

C. As individuals or as a group, the children might experiment with plants, observing how they react to such things as light and dark, water and lack of it, different types of soil. They may record their observations and compare them in discussion. Perhaps they would like to make a picture scrapbook, with each child contributing a page on his/her observations.

D. Go for a walk with the children and look for plants that are not getting sufficient space, water, or light. Help them take pictures and record such things as the place, interaction, time and season, and type of soil.

When the children return to the classroom, discuss why these plants weren't fulfilling their needs. Was a highway extension interfering with the plants' roots? Were plants in the shade of a building? If possible, return to the sites several times and record the plant growth throughout a season.

SUGGESTED RESOURCE MATERIALS

books for children:

Downer, Mary Louise. *The Flower: The Story of a Seed and How It Grew.* New York: William R. Scott, Inc., 1955.

Paul, Aileen. *Kids Gardening: First Indoor Gardening Book for Children.* Garden City, N.Y.: Doubleday & Company, Inc., 1972.

books for the teacher:

Cutler, Katherine N. *Growing a Garden Indoors or Out.* New York: Lothrop, Lee & Shepard Company, 1973.

Kirkus, Virginia. *The First Book of Gardening.* New York: Franklin Watts, Inc., 1956.

Selsam, Millicent E. *Play with Leaves and Flowers.* New York: William Morrow & Co., Inc., 1952.

Stone, A. Harris, and Irving Leskowitz. *Plants Are Like That.* Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1968.

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N.J: Silver Burdett Co., 1971. (Charts 9,14,15,20)

4 you've gotta eat and drink to be merry

CONCEPTS

People have certain basic needs only Earth supplies: air, water, food, warmth, and land.

Earth contains all the air, water, and land that people will ever have.

The more people there are, the more food and water they need.

People have other needs that should be fulfilled after basic needs are met. One of these needs is beauty.

STRANDS

In our cities and towns we note recurring *patterns* of water and food use. More water and food is needed as a population increases. As more people use water to drink, to take care of personal needs, or to accommodate industrial needs, the available supply of water *changes.* As more people use food, the available supply of food *changes.*

PERFORMANCE OBJECTIVES

The child will be able to . . .

- Cite several personal and several impersonal uses of water
- State simply his/her understanding that the larger the population of people or animals, the more food and water is required to keep them all alive

MATERIALS

for the Lesson Capsule: drawing paper ⌑ colored construction paper ⌑ glue or paste ⌑ scissors ⌑ crayons ⌑ package of straight pins or thumb tacks ⌑ pictures of water scenes ⌑ tagboard for chart (optional) ⌑ family snapshots of water scenes (optional)

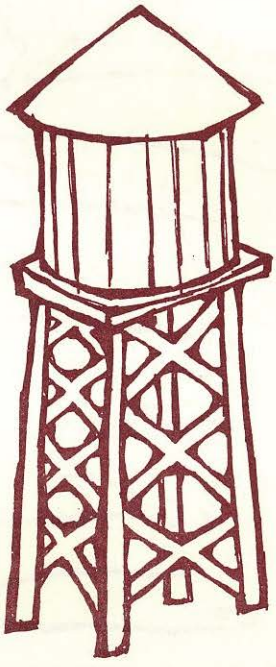
for Extension Activities: 2 pieces of "shirt" cardboard per child ⌑ black felt-tip marker ⌑ scissors ⌑ paints—blue and brown ⌑ paintbrushes ⌑ colored construction paper ⌑ glue or paste ⌑ crayons ⌑ 1 coat hanger per group ⌑ string or thread ⌑ hole punch ⌑ aluminum foil (optional) ⌑ aquarium with tropical fish or goldfish bowl with goldfish (optional)

LESSON CAPSULE

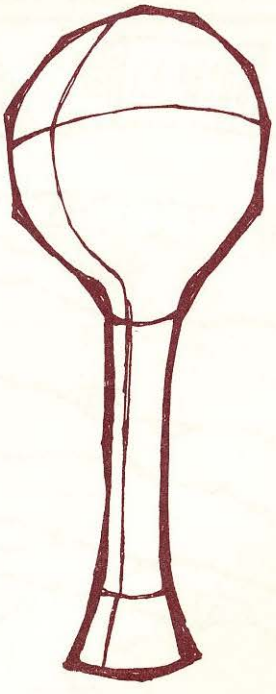
A. To introduce this activity you might read to the children from the book called *Splash and Flow,* by Ruth Howell. You will find it listed in the Suggested Resource Materials section at the end of this lesson. This book beautifully illustrates, for children, the value

of clean water. Afterwards, discuss the book using the following questions as a guide. If you cannot find a copy of *Splash and Flow,* work with these questions alone, as they will help develop in the children a conscious feeling of value for water.

- What would it be like if suddenly there were no water? What would be different in your home? in your neighborhood?
- What do you think it is like in a desert?
- Think about what you do during the day, and name all the places you might *find* water. *(**outside**—puddles, ponds, creeks, swimming pools, fountains, rain, snow, clouds ☆ **inside**—sinks, bathtubs, washing machines, refrigerators, tea kettles, canned vegetables)*
- How do you *use* water every day?
- What would it be like if there were no *clean* water? Which uses of water that you just named could you *not* do any longer?



To illustrate the concept that more people need more food and clean water, help the children make a water supply line. You will need to cut five or six water storage tanks of various sizes from colored construction paper. You might use various sized reservoirs instead, depending on your city's or town's source of water. Show these storage tanks to the children and explain their purpose.



Divide the class into five or six groups, and give each group a storage tank. Then give each child a sheet of drawing paper. Tell each of them to draw and cut out six fairly small faces on their piece of paper. These faces represent six people that get their drinking water from this storage tank. Next ask the children to paste these on the storage tanks. Tell them not to overlap any edges. In all probability, there will be many faces left over. Then have the children pin their storage tanks on a bulletin board and pin the remaining faces around the tanks.

Have the children look at the completed tanks and discuss the results. What can the children tell you from looking at the number of faces and the sizes of the various water storage tanks? (*The smaller the tank, the fewer the number of people that can drink from it.*) What about all the other faces that didn't fit on the water tanks? Where will they get their water?

Repeat the exercise using cutout drawings of barns of various sizes. Tell the children that a barn is where a farmer temporarily stores

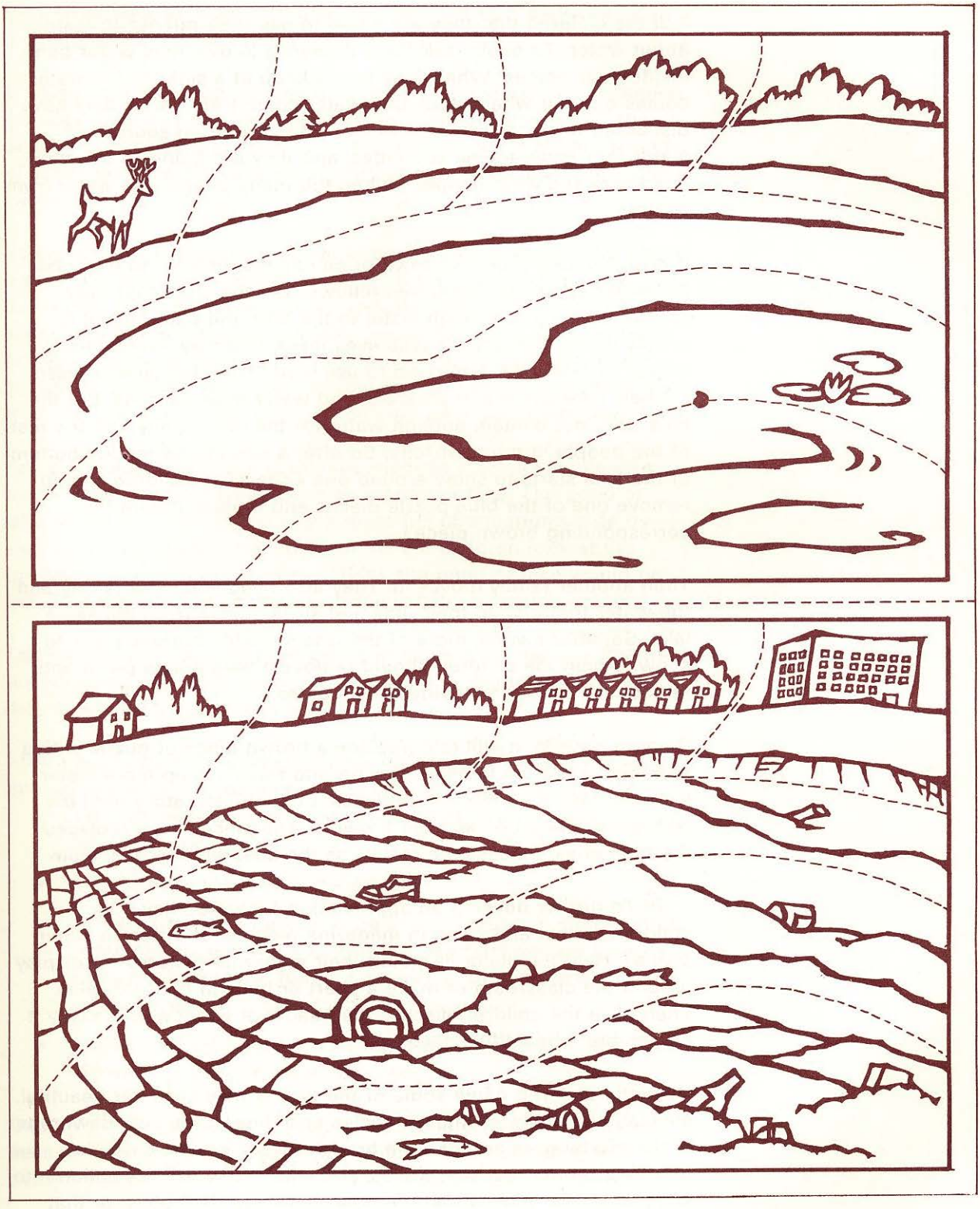
some of the food he grows, so each barn represents a farm. Again the children should draw and cut out six faces to paste on each barn. The number of faces that they can fit on the barns, without overlapping any edges, represents all the people that the different farms can supply with food. How many can each farm feed? Where will the leftover people get their food? Can the children suggest ways for those people to find food? (*Someone might suggest that they enlarge the barns (farms) so they can feed more people. This is a valid solution which can be paralleled with today's farms, but you might point out that farms can get only so big. There is only so much land that will grow crops for food.*)

B. You might let the children illustrate the concept another way. If it is refreshment time, you might demonstrate the situation for them by saying as you fill the juice glasses, "Every day our class drinks (two) cans of juice (or whatever number you actually use). What would happen if there were only one can of juice for the whole class today? What if another class were visiting during juice time, and there still were only two cans of juice? What would happen then?" You might repeat the exercise with cookies or crackers. Help the children relate, in a simple way, these situations to world food shortages.

EXTENSION ACTIVITIES

A. Making homemade puzzles is another activity that you can use to illustrate the relationship between population and water supply. Ask each child to bring two pieces of thin cardboard from home. Cardboard from laundry or store packaging of shirts or sheets would be appropriate. Each piece of cardboard will be used as backing for one of the two lake puzzles each child will make.

Provide each child with one puzzle pattern duplicated from this lesson for each set of two puzzles. Have the children paste this pattern on a piece of "shirt" cardboard or any other thin cardboard. Explain that one lake has water in it and one lake is dried up. Have the children color or paint the picture of the lake with water in it blue. They can color or paint the other things in the pictures any other colors they wish. Then have them color or paint the picture of the dried-up lake brown. Help the children trim the excess cardboard from the edges of their puzzles and cut the two puzzles apart. Then have the children carefully cut the puzzles into pieces as marked. You may wish to show them where the cut-lines are on each puzzle. Each of the two puzzles will have identical pieces so they can be interchanged.



Tell the children that they are going to use their puzzles to learn about water. To begin, ask them if anyone knows how water gets inside their homes. When they turn a knob at a sink or tub, water comes out, but where does that water come from? After they have discussed this process, explain that lakes are often sources of water for nearby towns and cities, and they are going to use their puzzles to see what happens when too many people use water from a lake.

If possible, use your own town or city as the location to describe the water supply problem that follows. Tell the class that their town/city has just enough water in the lake (the blue puzzle) to supply water to everyone who lives there. One day a new family moves in. They will also need to use water from the lake to wash clothes, take baths and showers, and water their gardens. But the lake does not contain enough water for the new family and the rest of the people in the town/city. So after a month, the muddy bottom of the lake starts to show around one edge. (The children should remove one of the blue puzzle pieces and replace it with the corresponding brown piece.)

Then another family moves in. They also need water every day and the water that fills up their tubs and sinks comes from the same lake. So, after awhile, more of the lake's muddy bottom starts to show. (Again the children should remove a blue puzzle piece and replace it with the matching brown piece.)

Once in a while, it will rain (replace a brown piece of puzzle with a blue piece) but the families moving into town use up more water from the lake than the rain replaces. Continue the story until the lake is "all dried up" and the brown puzzle pieces have replaced the blue ones. Discuss the results as the children perceive them.

B. To further develop an appreciation for water, have the children collect and bring in magazine pictures of different water scenes. Help the children mount their magazine pictures for display around the classroom or make a chart or bulletin board display. Then have the children discuss the beauty of water and the way it can create a beautiful scene.

Have the children name some of the places they consider beautiful, such as waterfalls, fountains, icicles sparkling in the sun, dewdrops in the morning, raindrops on a branch, rivers, rapids, cascades, bubbling brooks, oceans, waves, and lakes. Now ask the children to suggest similar places that are near their neighborhoods, or that

they have seen on trips with their families. Perhaps they can bring in snapshots of water scenes taken on these trips.

Discuss with the children why they think these places are beautiful. Do they think it is because they like the action of the water? the way light twinkles and reflects on the surface of water? the sound of water gurgling and bubbling? the fun they associate with a place where there is water?

You might ask if the fish that live in ponds, lakes, and similar places add to the beauty of the watery place. If the children are not sure, ask if they think a lake would be beautiful without any fish swimming in the water. You might use an aquarium as an example. (If your classroom does not have a goldfish bowl or tropical fish aquarium, perhaps you could borrow one or visit another classroom that has one. You might even set up your own classroom aquarium.)

Ask the children to imagine the aquarium as a small sample of a much larger body of water such as a pond or lake. The pond or lake would look something like a room full of aquariums side by side with no glass separating them. As the children look at the aquarium, ask them again if they think the pond or lake would be beautiful without the goldfish or tropical fish swimming around.

Tell the children that they are going to make a mobile of a beautiful watery place with fish, seaweed, and bubbles. Directions for the mobile will be found in this lesson.

After the children have finished their mobiles you might conclude this activity with a discussion, using the following questions:

- Why do people like to spend vacations at a beach, lakeshore, or bay?
- Why do *you* like being at a beach?
- If there are more people living in our city (town, community), more people will want to visit the beach. Have you ever visited a beach and found it crowded? Did you like the crowded beach? Why or why not?
- How could we help keep beaches from getting too crowded? Should we provide more beaches?

Continue this discussion as long as the children maintain interest. If possible, the children should leave with an understanding that beautiful watery places are important to people as vacation spots,

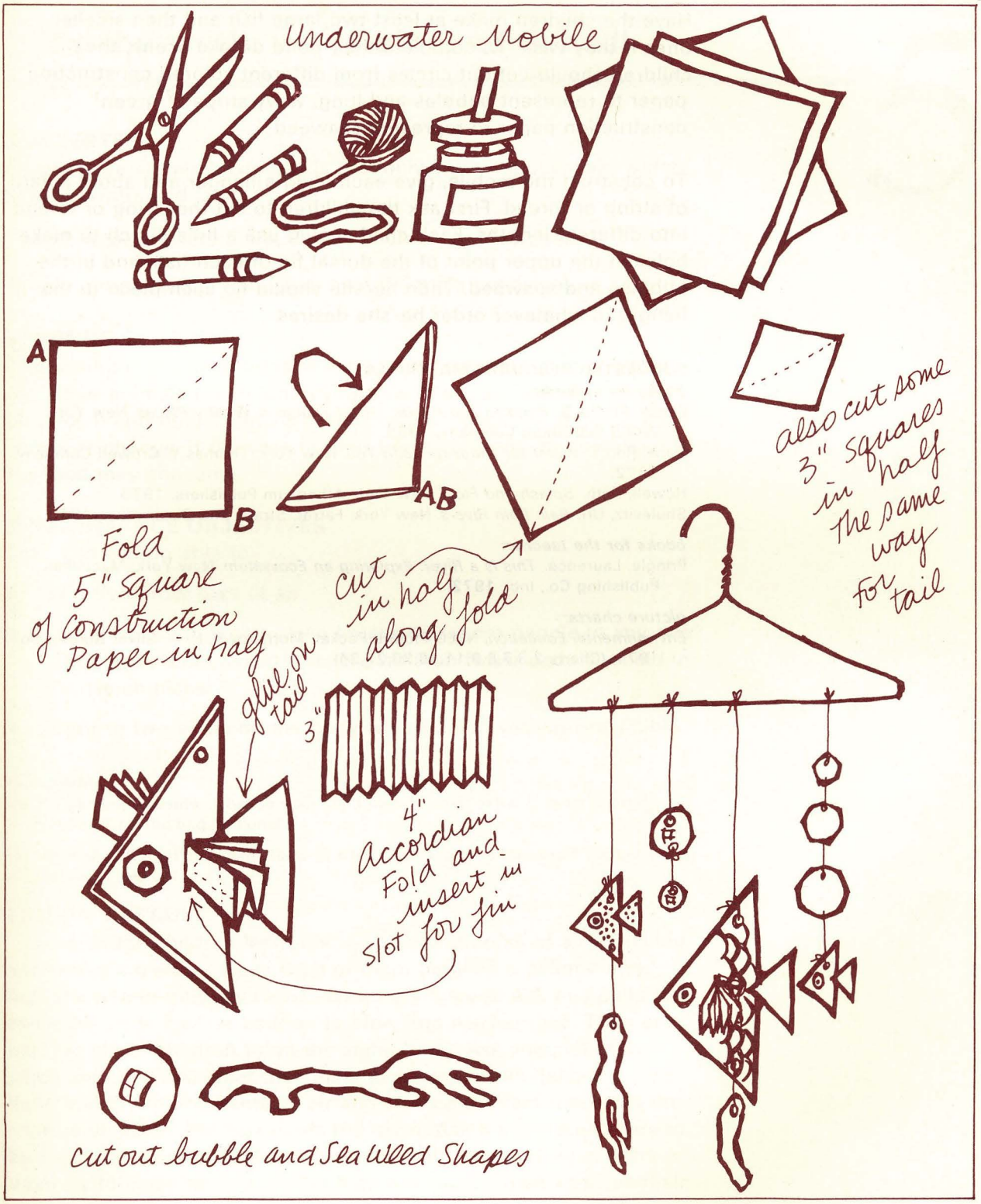
as places to go to get away from busy, noisy cities. These places should be saved for future generations (their children and their children's children), so they will have places to go to see this particular beauty and experience the fun you can have only at beaches.

Each child who makes a fish mobile will need several sheets of different-colored construction paper, glue or paste, a pair of scissors, string, and crayons. (**Note:** You might control the amount of waste paper by cutting large sheets into smaller pieces for the children to work with.)

Demonstrate in a step-by-step fashion how to assemble a basic fish for the fish mobile. (**Note:** You might construct an entire mobile beforehand for the class to use as a model.)

1. **Body:** Provide the children with 5" squares of construction paper in various colors. Have each child select a color of construction paper for the body of the fish. Show them how to fold their paper square so point A matches point B as shown in the diagram. This will make two triangles. Have the children cut along the fold line to separate the two triangles. These triangles will make the bodies for two fish.
2. **Eyes:** Cut out two circles for eyes from a contrasting color of construction paper. Glue these in place. Outline the eyes with black crayon and color in a black dot for the pupil.
3. **Tail:** From the same paper used for the eyes, or from a third color, make smaller triangles from a 3" square as in step 1. Glue this onto the body.
4. **Fins:** Make a slit near the center of the body of the fish. From the same or a contrasting color of construction paper cut a 3" x 4" rectangle. Have the children fold it lengthwise, accordion-style. Insert the folded strip of paper through the slit on the body of the fish and open the folds. Fold this fin back towards the tail.
5. **Scales, Protective Coloration:** Crayon any other desired design on the body of your fish.

To make smaller fish that will represent baby fish, repeat the same steps but use smaller squares of construction paper. Some children might like to make angel fish from cardboard covered with aluminum foil. Add stripes with black crayon or a felt-tip marker.


Underwater Mobile
A
B
AB
Fold
5" square
of Construction
Paper in half
cut
in half
along fold
also cut some
3" squares
in half
the same
way
for tail
glue on
tail
3"
4"
Accordian
Fold and
insert in
slot for fin
Cut out bubble and Sea Weed Shapes

Have the children make at least two large fish and then smaller ones if they wish. To complete their pond or lake scene, the children should cut out circles from different colored construction paper to represent bubbles and long, wavy strips of green construction paper to represent seaweed.

To construct the mobile, give each child a hanger and about a yard of string or thread. First ask the children to cut the string or thread into different lengths. Each child should use a hole punch to make holes in the upper point of the dorsal fin of each fish, and in the bubbles and seaweed. Then he/she should tie each piece to the hanger in whatever order he/she desires.

SUGGESTED RESOURCE MATERIALS

books for children:

Busch, Phyllis S. *Puddles and Ponds: Living Things in Watery Places.* New York: World Publishing Company, 1969.

Gans, Roma. *Water for Dinosaurs and You.* New York: Thomas Y. Crowell Company, 1972.

Howell, Ruth. *Splash and Flow.* New York: Atheneum Publishers, 1973.

Shulevitz, Uri. *Rain Rain Rivers.* New York: Farrar, Straus and Giroux, Inc., 1969.

books for the teacher:

Pringle, Laurence. *This Is a River: Exploring an Ecosystem.* New York: Macmillan Publishing Co., Inc., 1972.

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N. J.: Silver Burdett Co., 1971. (Charts 2,3,7,8,9,11,18,20,22,24)

it's the truth: we're air-conditioned!

5

CONCEPTS

People have certain basic needs that only Earth supplies: air, water, food, warmth, and land.

The more people there are, the more clean air they need.

People are responsible for their use of Earth's provisions.

STRANDS

One example of *interactions* with nonliving things is that of people and other animals breathing air, with its important element, oxygen. All people and other animals require oxygen because, through a chemical *change,* it releases to their bodies the energy contained in the food they consume.

PERFORMANCE OBJECTIVES

The child will be able to . . .

- Cite two properties of air
- Explain, simply, how he/she knows that more people in any one place use more oxygen from the air than fewer people would in that same place
- Point to two areas on the body where blood vessels are visible

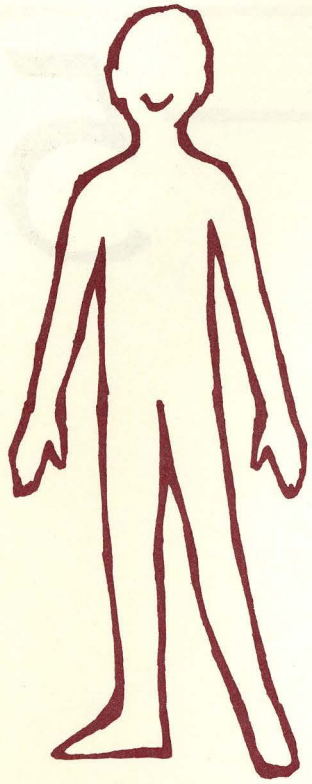
MATERIALS

for the Lesson Capsule: 1 balloon per child plus 1 dozen extra ⌑ several larger balloons ⌑ 1 plastic bag (optional)

for Extension Activities: small plants ⌑ used plastic food or ice-cream containers ⌑ old dishes or saucers

LESSON CAPSULE

A. Help the children learn about some properties of air by giving each child a balloon. Have each of them blow up a balloon and hold the opening tightly closed with their fingers. Ask one child to allow the air in his/her balloon to blow into his/her face. Then ask the rest of the children to do the same thing. Ask volunteers to name and *describe* what they think came out of the balloons. Help them identify the contents as air and discuss the fact that air is the mixture of gases that surrounds the earth. Ask the children to try to find and catch some of the air around them. You may wish to have them try to catch air in a plastic bag. Ask the children to wave their



hands in the air and describe the sensation. Then ask the children to blow up their balloons again. This time ask them to point the opening away from their faces. Ask them if they can see the air that comes out of the balloons. Ask the children if they can think of some things besides breathing that air might be necessary for, such as building and maintaining a fire. Have the children make a list describing the properties of air: it is invisible, it has no smell, it is tasteless, etc. Also have the children list or collect and mount pictures of some of the uses of air.

Discuss these uses with the children. Point out in further discussion that it is the gas oxygen, a major element of air, that is very important to them. Oxygen is the gas that people and other animals must have to breathe in order to stay alive. Children might find it fun to learn to pronounce, write, and use the word *oxygen*. Use the word as many times as you can during the day.

Next ask the children where they think the air in the balloons came from. Some children may think that air is only outside their bodies. As the children are thinking about this, draw a large outline of a human body on the chalkboard. As you ask the question again, help the children deduce that the air had to come from inside their bodies. Before they come to any final conclusions as to the precise area in their bodies, let them try the following activities.

- Stand and take several deep breaths.
- While still standing, take very deep breaths as you tightly hold your arms, head, chest, stomach, and legs.
- Describe what you feel.

Ask a child to go to the chalkboard and indicate the area of the human body he/she thinks is the source of the air. When the child has designated the chest, ask the other children to imagine what the "containers for air" inside their bodies look like. If they have trouble, remind them of the balloon activity. Then introduce the word *lungs* and draw a simple picture of the lungs in the outline of the body. By holding the openings of two balloons between your fingers and blowing into them, demonstrate how the lungs inflate and deflate. Ask the children to "breathe" along with you as you demonstrate the model lung. When the children seem to understand the principle, ask for volunteers to demonstrate the balloon model of the lungs. Give the children enough balloons and let them repeat the lung demonstration.

B. Help the children visualize that the more people there are in a given area, the more air these people will need. Obtain several large balloons and have each of several volunteers blow them up

and then let the air out. This stretches the balloon and makes it easier to blow up again. Then ask the same children to make sure that all the air is out of their balloons. Tell them that they are to blow up the balloons again *but* they are allowed only *one* breath. What they want to find out is how much air is in *one* breath. After each child has blown one breath into the balloon, tie off the end. Compare the sizes and tape one of the average-sized balloons to the bulletin board.

Now ask for a volunteer to demonstrate breathing for the class. Ask another volunteer to help count the breaths. Have both children come to the front of the room and face each other for the breathing demonstration. Ask the child to count out loud the number of breaths that the child takes in one minute. When this has been completed, write the number on the chalkboard. You may wish to try this again with another volunteer or suggest that the children try to count their breaths later during their free time.

Using the balloon you have taped on the bulletin board as an example, have the children discuss how much air the child breathed in one minute—how many balloons full? Then count the number of children in the classroom and discuss how much air all of them would need. Find out how many balloons this would fill. Ask the children what they think this means. How would they get this amount of air? Would the fresh air in the classroom ever be used up if more was not added? What do they do to assure enough clean fresh air in the classroom? in rooms at home? in large buildings? in subways? Ask the children what they think might happen if there were not enough fresh clean air. How has this affected them at times? You may wish to go outside with the children and note how many people they see. Ask whether all these people are breathing. Do they all need clean air? Then ask whether dogs, cats, and birds also use air. Do *all* animals breathe? What would happen if suddenly there were 50 more people, 50 more dogs, and 50 more cats in this area?

EXTENSION ACTIVITIES

A. For more advanced children, discuss the fact that there is a gas in the air called oxygen that people and other animals need; plants and trees do not use oxygen as people and other animals do. Plants use the gas carbon dioxide found in the air. Explain that animals breathe in oxygen and breathe out carbon dioxide. Plant life thrives on carbon dioxide and gives off oxygen. Does this suggest to the children that plant life is necessary for human survival? Ask the children if they can think of other reasons that

plant life is important to people. (*Plants provide food both directly in fruits and vegetables and indirectly through animals that eat the plants.*)

B. The children may enjoy celebrating the importance of plants in their lives by starting a window garden in the classroom. Help them make a list of all the materials they will need to start their garden. Help the children decide whether they would like to start their garden by planting seeds or with plants that are already growing, such as those found in dime stores and grocery stores. Provide them with books and pictures of plants and gardening. If you have any seed catalogs, add these to your classroom plant and gardening library.

If the children decide to grow plants from seed, make sure they are the kinds of plants that can be taken care of in the classroom window garden. For example, corn would not be appropriate in this environment. A very simple but beautiful plant that is extremely easy to grow is the coleus. It comes in many colors and varieties and the seeds can be purchased in many of your local stores.

If the children decide to start with small plants, have some of them bring in small petunias or pansies. Others might experiment with growing cactus and start a Cactus Corner.

The children will need to collect plastic food and ice-cream containers. These make excellent flowerpots. It is very easy to punch holes in the bottoms of these containers for drainage. Add a few stones or pebbles and fill the flowerpot with dirt. Use old dishes or saucers for drainage dishes beneath the pots. Ordinary soil is usually adequate for simple plants, including cacti. You can buy special prepackaged soils in a hardware or dime store.

Help the children realize their responsibility to provide the necessities for each of their plants. Make sure they understand that they should neither drown the plants nor let them dry out.

After the plants have been growing in the classroom for a while, ask the children to suggest some things that they can do with their plants. They may wish to hang some of their plants in the school library to make it more beautiful, have a plant sale, take some of the plants to a nursing home (for the aged), plant some of them around the school grounds.

C. More advanced children may be able to appreciate the necessity of clean air for humans and other animals. Hopefully, they will begin to evaluate some of the concepts dealing with pollution

of air and the direct and indirect effects of population on the quality of air.

You may wish to begin further investigation into the processes of breathing by asking the children what other places in their bodies they think the oxygen from the air goes to besides their lungs. Try to elicit from the children that *all* parts of their bodies must have oxygen at *all* times in order to continue living.

Have each child make a fist and while doing so look at his/her inner arm. Ask the children to look for the blue, perhaps slightly raised lines. Ask them if they know what those lines are. Some may know that they are blood vessels. Help the children look up *vessel* in the dictionary and see if they can draw any conclusions based on the synonyms found there.

Help each child find his/her pulse at the wrist, temples, and sides of the throat. Use the index finger. (Do not use the thumb because it has a pulsebeat of its own.) Let the children talk about the fact that the pulse is the result of the contractions in many blood vessels caused by the pumping action of the heart and that all these vessels are carrying blood containing oxygen to the cells in their bodies.

You may wish to have the children also look at the insides of their ankles. Ask them if they can find blood vessels there, too. Explain that the whole human body—every inch of it—contains many, many of these blood vessels that carry oxygen.

Explain that cats, dogs, monkeys, and many other kinds of animals have similar systems of oxygen transportation within their bodies and that all of these animals *must* have oxygen to breathe.

SUGGESTED RESOURCE MATERIALS

books for children:

Cutler, Katherine N. *Growing a Garden Indoors or Out.* New York: Lothrop, Lee & Shepard Company, 1973.

Kalina, Sigmund. *Your Blood and Its Cargo.* New York: Lothrop, Lee & Shepard Company, 1974.

Showers, Paul. *Drop of Blood.* New York: Thomas Y. Crowell Company, 1967.

Tuey, John, and David Wickers. *How to Make Things Grow.* New York: Van Nostrand Reinhold Company, 1972.

books for the teacher:

Kalina, Sigmund. *The Invisible Ocean.* New York: Lothrop, Lee & Shepard Company, 1973.

Kramer, Jack. *Easy Plants for Difficult Places.* New York: Walker & Company, 1974.

Weart, Edith L. *Story of Your Blood.* New York: Coward, McCann & Geoghegan, Inc., 1970.

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N.J.: Silver Burdett Co., 1971. (Charts 13,14)

6 it makes sense

CONCEPTS

People have other needs that should be fulfilled after basic needs are met. One of these needs is learning.

People can change how they interact with their environments.

STRANDS

A person develops the potential of his/her *various* talents and capacities through the learning process. While *continuing* to be the same person, the individual *changes* through his/her experiences into someone of more depth and breadth.

PERFORMANCE OBJECTIVES

The child will . . .

- Be able to identify the five basic senses
- Be able to give an example of how he/she has used at least three senses in order to learn
- Be aware that the senses can be developed through thoughtful use

MATERIALS

for the Lesson Capsule: small box with a 2 1/2" x 2 1/2" hole in it ⌑ apple, orange, tomato, and fairly round potato ⌑ large piece of cardboard for making "sense cards" ⌑ shoe box or bag ⌑ box to be used as a trunk ⌑ items for giant's trunk (See Lesson Capsule B.)

for Extension Activities: 1 handkerchief or neckerchief per child ⌑ stapler ⌑ small amount of wet macaroni ⌑ sassafras root, lemon, or similar item ⌑ small amount of salt ⌑ sugar or a spice ⌑ reproduction of a famous painting

LESSON CAPSULE

A. Tell the children that a mystery box will be placed in the back of the classroom during the day. The contents will be hidden, but a hole will be provided for a hand to fit through. Inside the box, place four similarly shaped items, such as an apple, an orange, a tomato, and a fairly round potato. Ask the children to check the box, one at a time, during the day and try to identify its contents. Tell them to keep their opinions of what is inside the box a secret until later. At discussion time, ask the children what they think is inside the box. Ask them how they came to their conclusions. Then ask them which senses they used to help identify the objects. Were those

senses limited to touch and smell? Pass the objects around and ask the children to take particular note of any odors and textures.

Discuss the fact that touching, seeing, and smelling are three ways people can get information or *learn* about things. Talk about the concept *to learn*—to gain information, understanding, or skill. Ask the children if they think their fingers can *learn. (There is now evidence of memory of experience at the individual cell level, indicating that all parts of the body are capable of learning independently.)* In discussion, point out that the senses are tools of the body. We can use these tools *to learn* about people, places, and things. Ask the children to name as many of these senses as they can. Help them make a list on a chart or chalkboard.

One of the goals of this lesson is to give the children the idea that they can *develop* their senses through use. You may wish to illustrate this by comparing two children's spontaneous descriptions of a classroom object. Explain that by looking at something again and again you should be able to observe more of the details. One need only take the time to observe carefully. Have the same children look at the same object again, but this time more carefully. Then have each child describe the object again. Discuss the new descriptions and how they differ from the earlier ones.

As the children begin to understand that their senses are learning devices that can be developed, conduct several short reinforcement exercises. These are centered on identifying the senses so that their existence becomes a natural part of the children's world.

- Print the name of each sense on a piece of cardboard. The children may then take turns drawing these "sense cards" from a shoe box or bag and acting out the sense indicated.
- Divide the class into two groups and play the game What Sense Am I Using? In this game, make a statement and have the children guess which sense is involved. Very perceptive children will realize that more than one sense is actually involved in every case. Try some of the following statements; then develop some of your own.
    - I love to walk through the mud in my bare feet. (*Sense of touch*)
    - I play my record player while I eat supper every night. *(Sense of hearing)*
    - This morning, a mockingbird was singing in the tree in my front yard. (*Sense of hearing*)

B. You may wish to have the children act out the parts of a story or fairy tale that will help them practice using their senses. Adapt a

plot you are familiar with, create your own story, or use the one below. First tell the story to the children so that they are familiar with the characters and course of events. Then help them retell and act out parts of the story.

The All-Knowing Giant and the People of Learning Land

In an imaginary underground labyrinth of caves called the Land of Knowledge lives an all-knowing giant named Blackbeard Bill. Giant Blackbeard Bill is the ruler of the Land of Knowledge. Giant Blackbeard Bill and his people have *more* knowledge than anyone else in the world. In a room next to his throne, the giant keeps a trunk full of special objects collected from all over his underground kingdom. The trunk is guarded night and day by two "grabbies." The grabbies are very strong and almost as big as Blackbeard Bill.

On the ground atop the giant's cave live the people of Learning Land. They are ruled by a very kind king, Willie the Wise. These people learn through their senses, as we do. Their main goal in life is to learn all they can about *everything* so that they can make their world a safer and more beautiful place to live in. The people of Learning Land are always asking the giant to give them something out of his mystery trunk so that they can take it to their king. The king, Willie the Wise, gets ideas from these objects, and from these ideas he tries to invent new things that are helpful to his people. The giant, however, does not give up a mystery object just because someone asks for it. To obtain one of these objects from the giant, a citizen of Learning Land must find his/her way alone through the dark, winding caves of the Land of Knowledge.

When a brave citizen from Learning Land finally finds the giant's trunk, the grabbies take the citizen to Giant Blackbeard Bill. In a booming voice, the giant tells the citizen that he/she may select an object from the trunk and examine it carefully, using all his/her senses. Then the citizen *must* tell the giant everything he/she can about the object. Giant Blackbeard Bill warns the Learning Land citizen that if he, the giant, can add any information about the object *after* the Learning Land citizen has finished describing it, then the object must be returned to the trunk. If this happens, all the citizen's effort will have been wasted and he/she must find his/her way home alone and empty handed.

If the Learning Land citizen describes the object to Giant Blackbeard Bill so that the giant can add nothing further to the description, the giant allows the citizen to take the object to the

king. The grabbies then help the Learning Land citizen find his/her way back through the maze of caves to the opening above the ground. When the brave citizen comes out of the maze, all his/her friends applaud and cheer. The king then asks the brave citizen to describe the object he/she has brought back. The crowd gets to examine the object and then it is given to the king.

Another brave citizen from Learning Land may volunteer to be the next to go down to the giant's underground world to try to bring back another object. The king, meanwhile, keeps all the objects at his court while trying to invent new ways to use them to help his people. He has various citizens of his kingdom help him with this.

Instead of having the children act out the entire story, you may wish to read or tell only the sections of the story that are relevant to the sensory activities and have the children act them out. You may also wish to change the story to get the maximum out of the sensory activities.

Help the children choose players to be the giant, the grabbies, and the king. Have the children make name cards with the names of these characters printed on them. Hang the name cards around the necks of the players. The objective of this activity is to see if the people of Learning Land can think of more descriptive words about the object than the giant of the Land of Knowledge can. They must not allow the giant to come up with more descriptive terms for the object taken from the trunk. You may wish to divide the class into two groups, placing one group on the giant's team and the other group on the king's team. As the children continue the activity, you may wish to choose from among other members of the teams to become the king and the giant.

You will want to choose the objects to be included in the giant's trunk so that they remain a mystery to the children. Some of the children will undoubtedly be familiar with a few of the objects selected for the trunk, but still can be challenged when it is their turn to describe the object. If some of the following objects are easily available, they will provide good opportunities for descriptions that involve using the senses. All these objects relate to the senses of *sight* and *touch.* Those that relate to other senses are so indicated.

empty spice container—*smell, taste* ⌑ chamois cloth—*smell* ⌑ music box—*hearing* ⌑ empty cologne bottle—*smell* ⌑ inside cylinder from roll of paper towels ⌑ tea strainer ⌑ fingernail file ⌑ egg beater—*hearing* ⌑ candle—*smell* ⌑ cotton balls ⌑ toothpick ⌑ whistle—*hearing* ⌑ piece of sandpaper—*hearing*

EXTENSION ACTIVITIES

A. For more advanced children, add a final scene to the story in the Lesson Capsule. King Willie the Wise should try to think up uses his people might make of the objects brought out of the Land of Knowledge. If the king is stumped, he should ask the citizens of Learning Land to help him think of uses for each object.

B. Ask the children what parts of their bodies they think help them *learn,* besides the brain. List the senses as they mention them. Then introduce the concept *to learn,* if this has not already been done. Ask the children to use only one sense to describe an object. Then ask them to use two or more senses to describe the same object. Finally, help the children use all their senses to describe the object. Now help the children compare the descriptions. In discussion, help the children see that they can develop their senses by using them frequently and by carefully observing the things around them. Children should become aware of the fact that using more than one sense whenever possible will help them learn more.

C. Ask each of the children to bring in a handkerchief or neckerchief to be used as a blindfold. On the day of this activity, tell the children that there are five objects they are to identify. They are to try to use only one sense to identify each object. For example, they might listen to a stapler, touch wet macaroni, smell a sassafras root, lemon, or similar item, taste salt or sugar, and look at a reproduction of a famous painting.

On the chalkboard, make a column for the description of each object. Have the children sit in a circle on the floor and blindfold them for each activity (except for looking at the reproduction). As the first object, pass the stapler in front of each child as you push down the stapling arm. Ask the children to give the most thorough description of the object that they can *without* naming it. Write these descriptive characteristics on the chalkboard under the first of the five columns. Place the object out of view and have the children remove their blindfolds. Now ask if anyone can identify the object or guess what it might look like. Finally, pass the object around the circle and let the children inspect it, using all their senses (except tasting). Ask the children if they think they learned more by this final inspection of the object. Repeat this procedure with the other four objects.

After all five objects have been described and identified, compare the columns on the chalkboard. Ask the children which sense they think helped them learn the most. Finally ask the children: If you could keep only one sense, which would you choose? Why?

D. Take the children outdoors for this activity. Try to find a spot under a tree either on the school grounds or in a nearby park. As an introduction, discuss the importance of silence. Explain to the children that silence will help them concentrate and allow them to develop their senses. Point out that they might otherwise miss hearing the rustling of tree leaves, the chirp of a bird, or the crackling of leaves under their feet. When the children are in the appropriate mood, blindfold one child and help him/her walk up to the tree and explore as many of its parts as possible, using all his/her senses (except sight). As the child proceeds through this sensory experience, he/she should tell the other class members what he/she is learning. Then ask the child to remove the blindfold and also use the sense of sight. Other children can volunteer to point out information the first child might have overlooked. For example, one child might point out a bud on a high branch that the first child missed because he/she did not look carefully enough. After several children have explored the tree, move on to other objects. Be sure at least one object is man-made.

Ask the children if they feel that paying close attention to the use of their senses makes them more aware of their immediate environment. Try to find out through discussion if they think that being more aware of their world makes them want to be more protective toward it—perhaps as they would feel toward a pet. Take this discussion as far as the children are able. During the day, whenever there are a few minutes to fill, you might return to a brief, simple sensory exercise of this nature with the children.

SUGGESTED RESOURCE MATERIALS

books for children:

Borten, Helen. *Do You Hear What I Hear?* New York: Abelard-Schuman Limited, 1960.

Borten, Helen. *Do You Know What I Know?* New York: Abelard-Schuman Limited, 1970.

books for the teacher:

Adler, Irving and Ruth. *Taste, Touch, and Smell.* New York: The John Day Company, 1966.

Asbjornsen, P.C., and Jorgen E. Moe. *East of the Sun, West of the Moon and Other Tales.* New York: Macmillan Publishing Co., Inc., 1966.

Liberty, Gene. *The First Book of Human Senses.* New York: Franklin Watts Inc., 1961.

Van Matre, Steve. *Acclimatizing: A Personal and Reflective Approach to a Natural Relationship.* Martinsville, Ind.: American Camping Assoc., 1974.

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N. J.: Silver Burdett Co., 1971. (Charts 1,6,7,8,13,14,15,18)

7 beauty is . . .

CONCEPTS

People can change how they interact with their environments.

People have other needs that should be fulfilled after basic needs are met. One of these needs is beauty.

Each person must examine how he or she lives to decide whether he or she helps build or destroy the environment.

STRANDS

Beauty is everywhere—in natural objects, abstract geometric designs, *interactions* between people—in limitless places and processes. With careful thought, we can learn to discern the *similarities* and contrasts in these, the emerging *patterns,* the subtle and not so subtle *variations;* we can begin to consciously appreciate and to make our own contributions to beauty.

PERFORMANCE OBJECTIVES

The child will be able to . . .

- Identify several objects he/she finds beautiful because of their special appeal to at least three senses
- Identify these senses and report his/her impressions of some beautiful things, people, or ideas in his/her life

MATERIALS

for the Lesson Capsule: series of art slides, prints, or photographs ⌑ drawing paper and crayons ⌑ 2 pieces of tagboard approx. 8" x 10" ⌑ record player and records ⌑ several pieces of different-textured fabrics

for Extension Activities: none

LESSON CAPSULE

A. Give the children drawing paper and crayons and ask them to draw the most beautiful thing they've ever seen. Suggest that they think hard before they decide what to draw, recalling their favorite vacation or holiday trip, a discovery they made, a place they enjoyed. When the children have finished drawing, have them place their pictures facedown on their desks and ask them if they think everyone has drawn the same thing. Then give the children another sheet of drawing paper and ask them to draw a second picture; this time have them *all* draw a tree. It can be any kind of tree and it can

be leafless or filled with leaves; it can have birds singing in it, lions sleeping on its branches, or it can be empty and bowed over by a strong wind. It can be a tree like the one in the child's front yard, or an imaginary one. It can be straight or twisted. Tell the children that it should be a beautiful tree. When their picture of a tree has been completed, have the children turn their first picture over, and with both pictures in front of them, discuss what makes something seem beautiful to them. Ask the children if only their eyes tell them something is beautiful. How about their ears? their noses? their fingers? Ask them if they can think of anything else that helps them decide whether something is beautiful. Ask the children to tell about some beautiful things they have heard, touched, and smelled. Have them discuss what made these things beautiful to them.

B. As a continuation of the preceding activity, you might show a series of art slides or display art pictures on the bulletin board. The display can consist of paintings or photographs, and each item within the display should be numbered. The pictures or slides should cover a wide range of subjects and styles, such as abstracts, still lifes, landscapes, portraits, colorful scenes of people or cities.

On one of two large tagboard cards, make a blue check with crayon and write the words "Most Beautiful." On the other card, make a blue minus sign and write the words "Least Beautiful." Ask two volunteers, in turn, to pin the two cards on the pictures they choose as most and least beautiful. Discuss with them the reasons for their choices. Then ask the class members why they think different individuals have different opinions. Do they think their parents' ideas of beauty influence them? Do the pictures they have hanging at home influence them? What about pictures they see in books?

Repeat the exercise with several other volunteers. Then ask each child in the class to make his/her choice of the pictures in terms of most beautiful and least beautiful. Compare the ratings given the pictures and tally the results. Select a committee to hang the "Most Beautiful" choices in an exhibit on a wall in the classroom. Suggest that the committee *plan* how they would like to arrange the pictures to maximum viewer advantage.

C. You may wish to repeat activity B at other times, introducing the experiences of listening to and comparing different styles of music and looking at and feeling different textures of cloth.

D. One day you might try to arrive at a consensus or a majority vote on what is one of the most beautiful things that can be seen in or from the classroom. Remove it for a day or two. If it is a scene observed through the windows, draw the shades. Discuss reactions.

Did the class miss the object or view? Why? Did some children seem to miss it more than others?

Experiment with sounds in the same way. First have the children listen to some unpleasant sounds; then play some soft music. What do the children think *their* reactions are to beautiful sounds? to unpleasant sounds? How did the children react *inside* to beautiful sounds? to unpleasant sounds? Ask the children if they behaved differently when they listened to beautiful sounds; to unpleasant sounds. How was their behavior different?

EXTENSION ACTIVITIES

A. More advanced children may wish to rate pictures, music, etc., on a scale of 0–5, from least beautiful to most beautiful. They may also wish to discuss the reasons for their ratings in greater depth. For example, you might ask for their reactions to colors, shapes, subjects, noise levels, moods. Which of each makes the children feel happiest or most alive?

B. More advanced children may also enjoy talking about beautiful things to do. In this discussion, the children might also volunteer to tell each other about something beautiful someone they know did for another person—or for an animal. You might have the children sit quietly for a minute or two toward the end of this activity to think over their own, individual actions during the past 24 hours and ask themselves whether *they* behaved beautifully at any time during that period. Ask how such behavior made them feel toward themselves and the person or animal they interacted with.

SUGGESTED RESOURCE MATERIALS

books for children and the teacher:

Borten, Helen. *Do You See What I See?* New York: Abelard-Schuman Limited, 1959.

Borten, Helen. *A Picture Has a Special Look.* New York: Abelard-Schuman Limited, 1961.

Hogeboom, Amy. *Familiar Animals and How to Draw Them.* New York: Vanguard Press, Inc., 1946.

Kessler, Art. *Art Is Everywhere: A Child's Guide to Drawing and Painting.* New York: Dodd, Mead, & Company, 1958.

Ota, Koshi, Susumu Kakehi, Tokuzo Haba, et al. *Printing for Fun.* New York: McDowell & Obolensky, 1960.

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N.J.: Silver Burdett Co., 1971. (Charts 1,7,10,16,18,24)

fun is . . .

8

CONCEPTS

People have other needs that should be fulfilled after basic needs are met. One of these needs is fun.

People have other needs that should be fulfilled after basic needs are met. One of these needs is meaningful work.

People have other needs that should be fulfilled after basic needs are met. One of these needs is other people.

STRANDS

Fun can be a *variety* of things to a *variety* of people. Nonetheless, experiences that are "fun" to people usually have some similar characteristics. Many people experience their most memorable fun when it occurs while *interacting* with others.

PERFORMANCE OBJECTIVES

The child will be able to . . .

- List several characteristics of *fun*
- Cite one or two personal instances in which work has also been fun
- Relate at least two personal experiences that indicate he/she values the companionship of other people—working and/or playing

MATERIALS

for the Lesson Capsule: drawing paper ⌑ crayons ⌑ glue or transparent tape ⌑ crepe paper ⌑ scissors ⌑ construction paper ⌑ string ⌑ shoe box ⌑ materials for making puppets and a puppet stage

for Extension Activities: drawing paper ⌑ crayons ⌑ lightweight cardboard ⌑ string or yarn ⌑ paper punch

LESSON CAPSULE

A. Ask the children if they would like to have a class party. If they would, tell them that they must plan their party and this means work. Ask the children if they are willing to work *now* in order to play *later.* Then list some of the tasks they must complete before they can enjoy their party:

- Making invitations
- Making decorations

- Arranging for refreshments
- Deciding on the games to be played

The children undoubtedly will decide it is worth the work to have a party. Someone might even mention that work can be fun, too. Since the various aspects of this activity will take a number of hours altogether, you probably will want to schedule the activity over several days.

For the first task, making invitations, explain to the children that everyone is to design and make an invitation for someone else in the class. Each child is to use his/her imagination to think of a picture that indicates he/she wishes a guest to come to the party. The children can use crayons and drawing paper for this project. Have the children "draw names" to find out whom they are inviting. When the invitations are finished, have the children fold them and write the guest's name on the outside. You may wish to add to the anticipation by having the children place their invitations in a shoe box labeled "U.S. Mail" and have one child play the part of the mail carrier.

In making decorations, the second task, the idea is to create a party atmosphere. The decorations need not be elaborate. Have the children cut streamers from rolls of different-colored crepe paper. Children might bring in flowers, either from their parents' gardens or from nearby woods or vacant lots. Dandelions would be fine. Children may wish to make party hats from construction paper and glue paper designs on them. Designing placemats can be another party project for a group of children or the entire class.

Arranging for refreshments, the third task, might be a bit more difficult. Parties do not seem like parties without food—especially for children—but remember to keep it simple. Parents might volunteer to provide cookies and noncarbonated soft drinks. If this is not feasible, you might simply designate the everyday crackers and juice or milk as party food. The point to be stressed with the children, regardless of what food you have, is that having food for a party involves the work of planning and obtaining.

The last task in preparation for the party may be the most important to the children—deciding on the games to be played. Have them choose from the following list, or make up a similar list that you think is more appropriate. Be sure you mix both work and play in the list.

- Play *Duck, Duck, Goose.*
- Wash the chalkboard.

- Play *Drop the Handkerchief.*
- Wash the windows.
- Put away the toys.
- Play *London Bridge.*
- Do calisthenics.
- Play *Farmer in the Dell.*
- Sing some songs.
- Have a spelling bee.

Now discuss the following questions with the children.

1. Why did you choose these activities?
2. How does your choice differ from some of the other activities listed?
3. Would there be other times when you would probably prefer to do some of the other activities, such as wash the windows or put away the toys?
4. Were you working when you were planning and making the decorations?
5. How can work be fun?
6. Why do you think it is *important* that we have fun some of the time?
7. Do you think it is *important* that we have fun all the time? If so, why?
8. How would you classify necessary daily activities, such as taking baths, brushing teeth, and getting dressed?
9. Do you think you always laugh a lot when you're having fun?

Children's responses to these questions should indicate that they have a basic understanding that fun means to be amused, to entertain or be entertained, to experience laughter and various degrees of nonrestraint—all the way to silly behavior. If it does not occur to the children, you might help them see that *expecting* these results also leads to a feeling of having fun. With these understandings in mind, the class should give its party and enjoy having fun.

B. Begin this activity by again asking the children what they think fun is. Have a number of children give their ideas. Responses might include, "when I play"; "when we smile or laugh"; "something that makes you happy inside"; "doing something you like"; or "doing something with someone you like." Some children

may cite specific activities, such as "blowing bubbles" or "visiting the zoo." Note particularly in the discussion whether any of the examples of fun help others to have fun as well as the children themselves. If so, point out those examples to the children. Then tell them that today they are going to plan something that will be fun for them and for others as well. Suggest that they plan a puppet show.

Talk with the children about puppet shows and the various kinds of puppet shows they have seen or taken part in. Ask them to tell about the stories they have seen dramatized with puppets. Ask them for suggestions as to what stories they would like to dramatize as a puppet show.

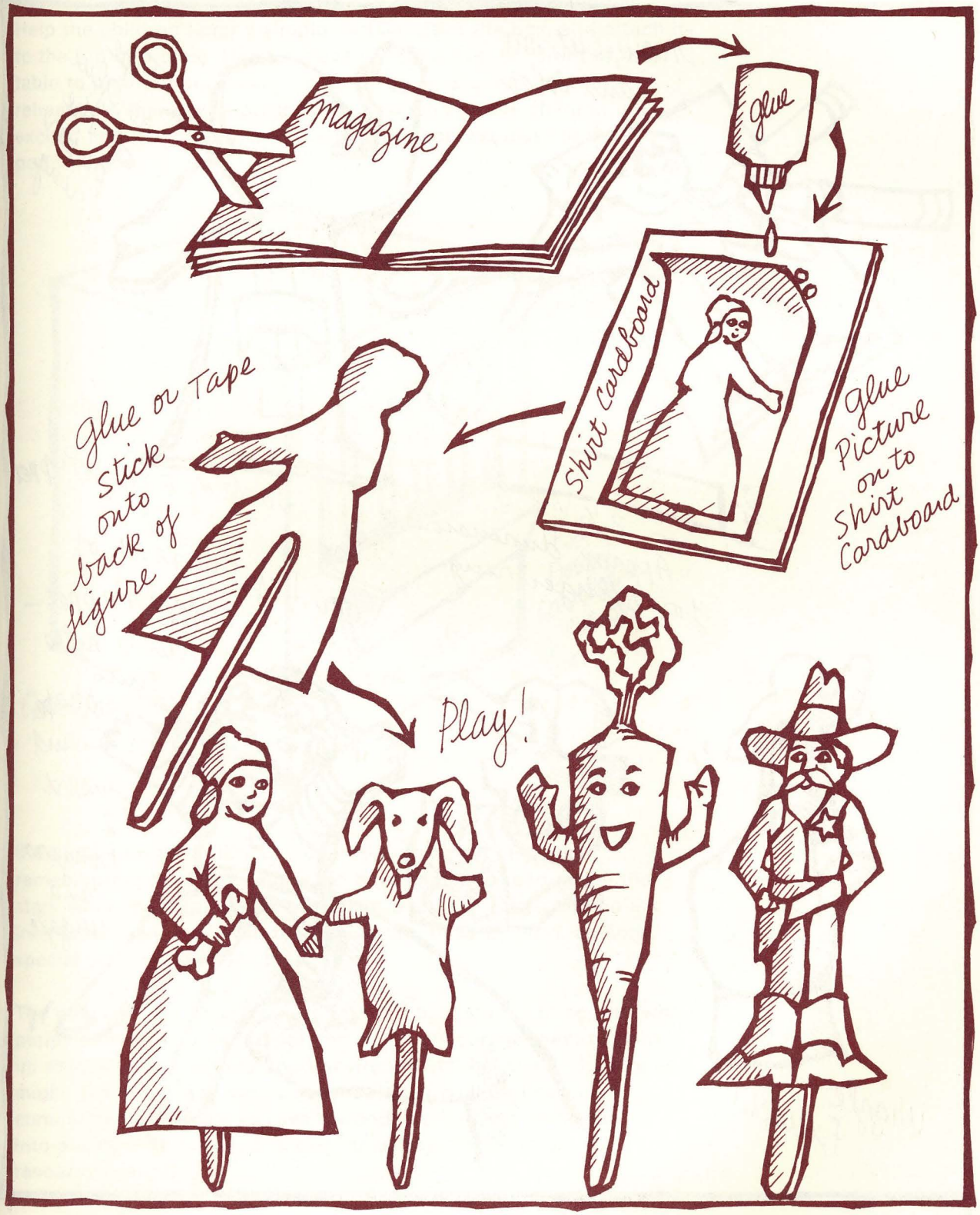
If you already have puppets in the classroom, you may wish to use them and let the class spend its time working out the story, props, sets, and rehearsing for the show. If you do not have puppets in your classroom, the children may make them as part of this activity. Several kinds of puppets are easy to make—particularly stick puppets, finger puppets, and hand puppets. Directions for making them can be found in many arts and crafts books; you also will find illustrated directions for stick puppets and finger puppets in this lesson.

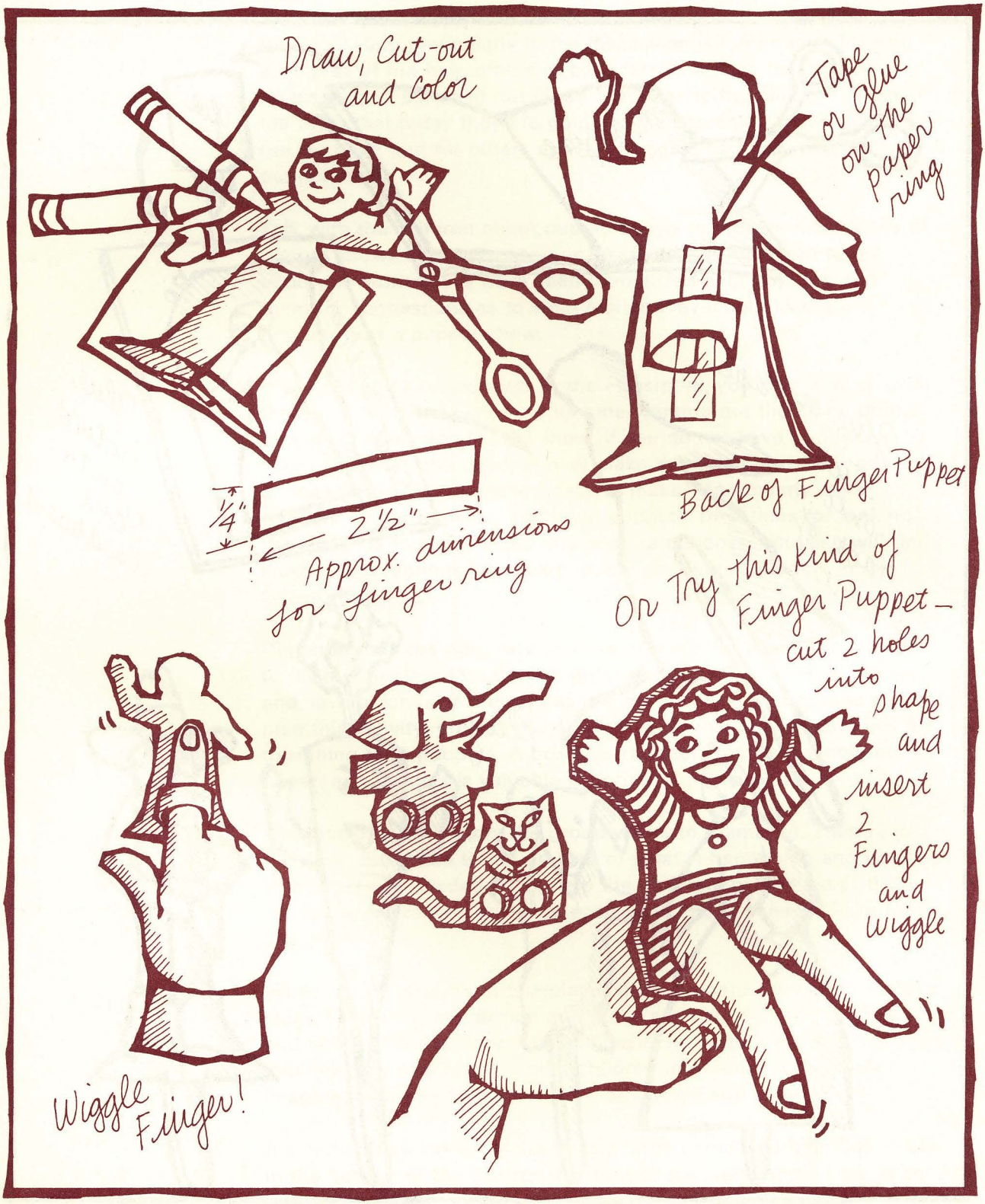
Depending on the ages and abilities of the children, you may wish to divide the class into several groups and work on several stories and several kinds of puppets at one time. But no matter how you plan this activity, provide the children with a variety of materials for designing their puppets. A box of scrap fabrics, buttons, colored paper, and plastics is valuable for projects such as this.

First decide on the story the group wants to dramatize. Then read the story over once to get an idea of what is happening and what characters are needed. Then help the children make a list of the necessary characters and help each child choose one to make into a puppet.

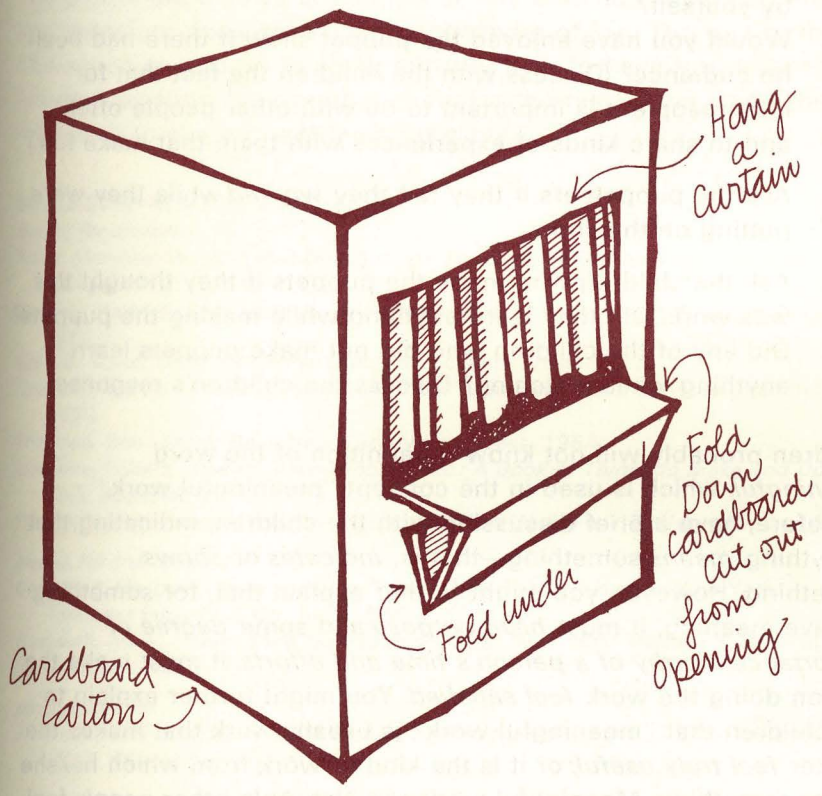
When the children have completed their puppets, help them make a stage for their show, design and make any sets that are needed, and collect the necessary props. These should be kept to a minimum, as it is better for the children to practice using their imaginations than to rely on too many props and sets.

A simple stage can be made from a large cardboard box. Cut a hole in the bottom of the box for the front of the stage and a hole in an


Magazine
Glue
Shirt Cardboard
Glue Picture on to Shirt Cardboard
Glue or Tape Stick onto back of figure
Play!


Draw, Cut-out and Color
Tape or Glue on the paper ring
Back of Finger Puppet
1/4"
2 1/2"
Approx. dimensions for finger ring
Or Try this kind of Finger Puppet – cut 2 holes into shape and insert 2 Fingers and wiggle
Wiggle Finger!

adjacent side so that the children can manipulate their puppets. Help the children hang a simple curtain, paint the box, and attach it to the top of a table. Hang a piece of fabric over the front of the table to hide the puppeteers, and the show is ready to go into rehearsal. When the show is ready to open and the children are excited and having fun, have them invite another class to see the performance.



If the children have difficulty operating their puppets and remembering the story, you could have someone read or tell the story while the puppeteers work their puppets. If the children are interested, they may wish to have several children work up some special sound effects for their show.

The children may enjoy making up their own stories to act out with puppets on the puppet stage. You might encourage them to think up stories that exemplify good environmental behavior. The stories might deal with such topics as what is wrong with littering, a community that wants to save a wooded area from being turned into a shopping center, or a town that learns how to use its resources wisely.

After a visiting class watches the puppet show, ask both groups the following questions.

1. Did you have fun watching (or working with) the puppets?
2. Did you enjoy the story?
3. What did you like most about the puppet show?
4. Would you have had as much fun if you had spent the time by yourself?
5. Would you have enjoyed the puppet show if there had been no audience? (Discuss with the children the fact that for most people it is important to be with other people often and to share kinds of experiences with them that make fun.)
6. Ask the puppeteers if they felt they *worked* while they were putting on the show.
7. Ask the children who made the puppets if they thought this was work. Did they learn anything while making the puppets? Did any of the children who did not make puppets learn anything while watching? Discuss the children's responses.

Children probably will not know a definition of the word *meaningful,* which is used in the concept "meaningful work." Therefore, have a brief discussion with the children, indicating that everything *means* something—that is, *indicates* or *shows* something. However, you might further explain that, for something to have meaning, it must *have purpose* and some *degree of importance worthy of a person's time and efforts.* It must make the person doing the work *feel satisfied.* You might further explain to the children that "meaningful work" is usually work that makes the worker *feel truly useful;* or it is the kind of work from which he/she *learns* something. Meaningful work can also *help other people* feel happier, healthier, or it can help them learn.

EXTENSION ACTIVITIES

A. Have the more advanced children try to define *fun* by drawing pictures to illustrate statements such as these:

- Fun is . . . doing something with a friend.
- Fun is . . . doing nothing.
- Fun is . . . going fishing with my dad.
- Fun is . . . flying kites.

You might get the children to think about these statements by reading to them the Snoopy book called *Happiness Is a Warm Puppy.* Ask the children to make up similar phrases and to illustrate each. If necessary, help them write their phrases at the bottom of

their drawings. You and the children may wish to bind these together into a book to be shared with others. Or you may simply wish to display the drawings around the room for all to see and discuss.

B. Children might use their puppets from Lesson Capsule activity B to make up a new play about why *they* think fun is important. The plot might involve a little girl or boy who has never had any fun and therefore does not know the meaning of fun. The rest of the characters should try to show him/her how to have fun. After the children perform their puppet show for the rest of the class, they may wish to share it with another class.

SUGGESTED RESOURCE MATERIALS

books for children:

Adair, Margaret W. *Do-It-In-A-Day Puppets: For Beginners.* New York: The John Day Company, Inc., 1964.

Buckley, Helen E. *Josie and the Snow.* New York: Lothrop, Lee & Shepard Company, 1964.

Carrick, Carol. *Sleep Out.* New York: The Seabury Press, 1973.

Chernoff, Goldie T. *Puppet Party.* New York: Scholastic Book Services (Starline), 1972.

Freeman, Don. *Beady Bear.* New York: Viking Press, 1954.

Lopshire, Robert. *How to Make Flibbers, etc.: A Book of Things to Make and Do.* New York: Beginner Books, 1964.

Renfro, Nancy. *Puppets for Play Production.* New York: Funk & Wagnalls, Inc., 1969.

books for the teacher:

Beresford, Margaret. *How to Make Puppets and Teach Puppetry.* New York: Taplinger Publishing Co., Inc., 1966.

Rockwell, Anne. *Games (And How to Play Them).* New York: Thomas Y. Crowell Company, 1973.

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N.J.: Silver Burdett Co., 1971. (Charts 3,4)

9 beauty is in the eye of the beholder

CONCEPTS

All living things interact with (help, hurt, or depend upon) other living and nonliving things in their environments.

Sudden or long-lasting disturbances in the home communities of people, or other animals may cause them to leave or to die. Sudden or long-lasting disturbances in the home communities of plants may cause them to die.

People have other needs that should be fulfilled after basic needs are met. One of these needs is beauty.

Each person must examine how he or she lives to decide whether he or she helps build or destroy the environment.

STRANDS

Although there are thousands of *varieties* of plant life, flowers, weeds, and trees also have many *similarities.* Some of the various characteristics found in weeds have made it possible for these plants to *adapt* and thereby to survive in obstacle-ridden environments. Some humans, who also find themselves beset by physical and/or social obstacles, are able to overcome by *adapting.*

PERFORMANCE OBJECTIVES

The child will be able to . . .

- Describe the commonly accepted difference between weeds and flowers
- Verbally note some similarities in the design of several tree leaves
- Cite several people who displayed great adaptability and perseverance in overcoming either serious physical or social obstacles

MATERIALS

for the Lesson Capsule: 8 to 10 weed leaves per child ⌑ 1 sheet of manila paper or tagboard per child ⌑ transparent tape ⌑ several colorful tree leaves per child ⌑ 1 sheet of waxed paper per child ⌑ an iron and ironing board or substitute ⌑ several old newspapers ⌑ paper punch ⌑ yarn or string ⌑ scissors ⌑ 1 piece of construction paper or cardboard per child

for Extension Activities: several trowels or old, large spoons

LESSON CAPSULE

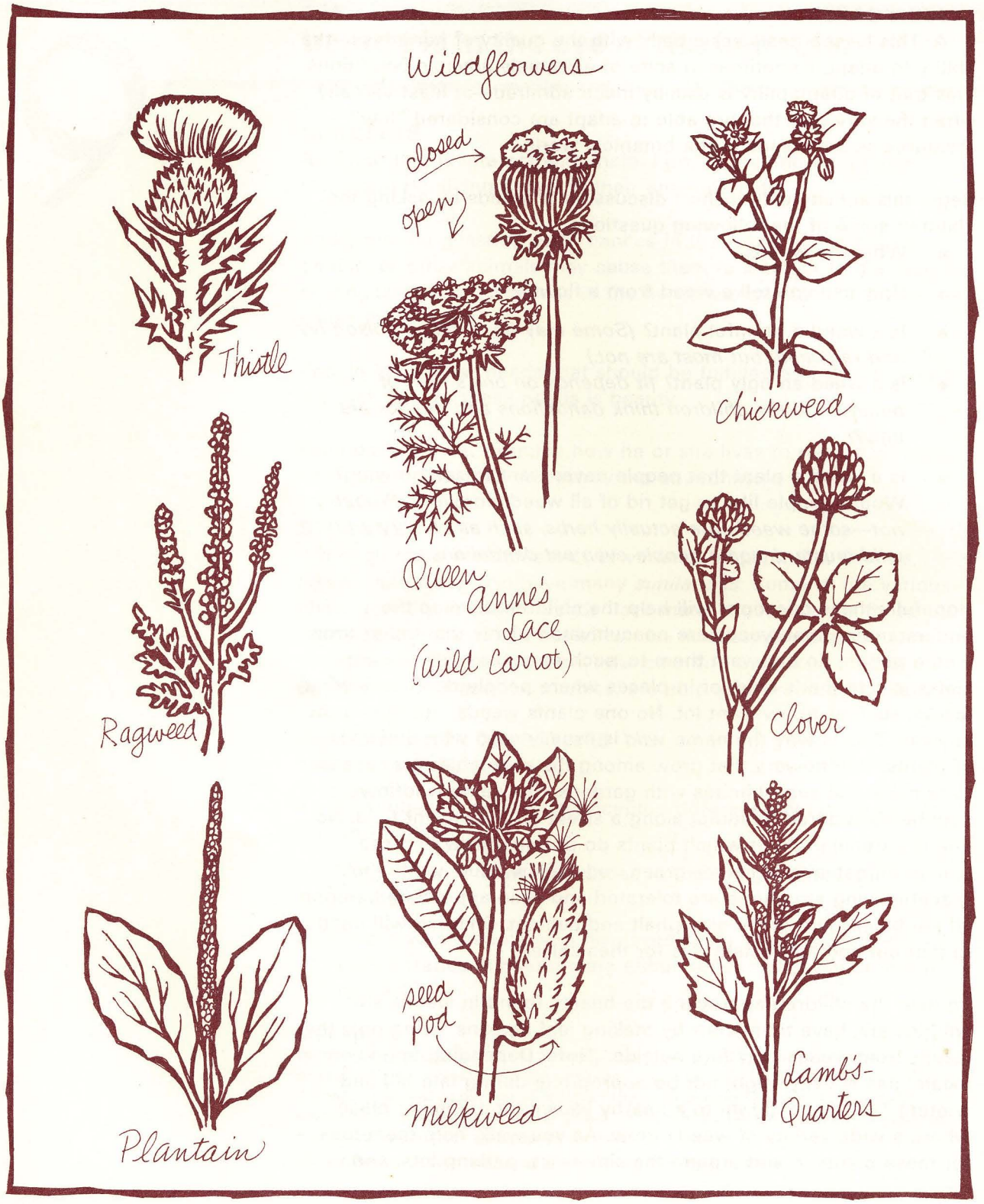
A. This lesson deals essentially with the quality of hardiness—the ability to adapt, sometimes in spite of extremely adverse conditions. This trait of adaptability is usually much admired—at least verbally. Often the survivors that are able to adapt are considered "low" creatures as are weeds in the botanical world.

Begin this activity with a short discussion of weeds by asking the children some of the following questions.

- What are weeds?
- How can you tell a weed from a flower?
- Is a weed a harmful plant? *(Some may be, such as poison ivy and ragweed, but most are not.)*
- Is a weed an ugly plant? *(It depends on one's idea of beauty—do the children think dandelions and thistles are ugly?)*
- Is a weed a plant that people never want to see growing? Would people like to get rid of all weeds forever? *(Probably not—some weeds are actually herbs, such as chicory and wild mustard; some people even eat dandelions.)*

Hopefully these questions will help the children develop the understanding that weeds are noncultivated plants that either grow where people do not want them to, such as at the base of corn stalks in a farmer's field, or in places where people don't care what grows, such as in a vacant lot. No one plants weeds, but they grow anyway. This is why the name *wild* is usually used with these kinds of plants. Wildflowers that grow among the vegetables are weeds to farmers and suburbanites with gardens. The same wildflowers may be considered beautiful along a street or in a vacant field. No one is particular about which plants do or don't grow in these places, so patches of color—green, red, yellow, blue, white—in graceful living structures are tolerated and even appreciated among all the blacks and grays of asphalt and cement. Children will need to find out and appreciate this for themselves.

To help the children appreciate the beauty found in weeds and wildflowers, have them start by making leaf designs, using only the leaves from weeds they find outside. (**Note:** Depending upon your locale, this activity might not be appropriate during late fall and winter.) Take the children to a nearby vacant lot or similar place where a wide variety of weeds grow. As you walk, help them look for these plants in and around the sidewalks, parking lots, and


Wildflowers
closed
open
Thistle
Chickweed
Queen Anne's Lace (wild Carrot)
Ragweed
Clover
seed pod
Milkweed
Plantain
Lamb's-Quarters

alleys. If there is not a vacant lot nearby, you might visit a cemetery. Many of these are parklike, and usually weeds abound.

The children should pick *only one leaf* from each weed they find. If the children are quite young, they may not be able to distinguish a weed from a flower that was planted on purpose. You and the other adults should be prepared to guide them in their choices. Help the children find as many different shapes and sizes of leaves as they can. You might warn them, however, that more than one child should not pick a leaf from any single plant, since this might cause the plant to die.

The weeds you find, of course, will depend upon your geographic location. Rather common in a number of places are dandelions, chickweed, crabgrass, plantain, Queen Anne's lace, lamb's quarters, clover, ragweed, milkweed, thistle, and yarrow. It is not necessary that you be familiar with the names of these weeds. However, familiarize the children and yourself with poison ivy so that no one will make the mistake of touching it.

The emphasis of the lesson is on the variety of weed leaf shapes and sizes and their beauty. Also stress the fact that most weeds are merely plants that are hardy enough to come up unattended in many places, and therefore are considered common.

As soon as each child has collected 8 to 10 leaves, return to the classroom. There, distribute a sheet of manila paper, or tagboard to each child. Suggest that the children try different leaf arrangements until they have a design that pleases them. When each child has decided on a design, help him/her fasten the leaves to the paper with strips of transparent tape.

When all the children have completed their leaf designs, have them

discuss what they learned about weeds. You may wish to use the following questions as a guide.

- Do you think the leaves you collected are pretty? (Point out the variety and similarity of the leaves; the symmetry of veins, etc.)
- Where did you find these weeds? Where else have you noticed weeds growing? Have you noticed them growing in any unusual places, such as on an outside windowsill or between the cracks in a sidewalk?
- How do you think the weeds you found might have gotten there? *(Seeds may have been carried by the wind, on the fur of animals, or the clothing of people.)*
- What do you think would happen if a bulldozer showed up tomorrow on a vacant lot? Who would miss the weeds? *(Animals who might have eaten them or slept among them; children who might have played in them and learned about them)*

You might end the discussion by having the children decide whether or not they think weeds should be abolished. Then decide where the children can display their leaf designs for a day or two before taking them home.

B. As an autumn activity you might have the children collect tree leaves to make "stained glass windows." If the trees do not change colors in your area, you might substitute varying shades of green leaves.

On a bright, sunny autumn day, take the children outside for each to collect two or three colorful leaves. Suggest that the children find leaves of different shapes, sizes, and colors. If there are only a very few trees near the school, you might request the children to collect leaves from their neighborhoods and bring them to school. Give each child a sheet of waxed paper, and point out the waxier side, and have them work with this side up.

Ask the children to fold their waxed paper in half and arrange their leaves on the *inside.* Make sure the *top* half of the paper is folded over the arrangement of leaves.

Meanwhile, you should prepare an "ironing board." Place a pile of newspapers on a table top, and heat up an iron. Then, one-by-one, the children should bring their designs to be sealed. Let each child

help you place his/her design between a folded sheet of newspaper. Then, gently but firmly, use a hot iron to iron over the newspaper several times. The heat will melt the wax on the waxed paper and glue the top and bottom halves of the paper together with the leaf design secure inside. Then remove the protective newspaper.

Hang the children's pictures in a window, creating a stained glass effect. The children may wish to punch two holes at the top of each picture and hang these with yarn or string.

You may wish to have the children frame their picture in a piece of cardboard or construction paper. Cut an opening—a rectangle, or oval shape—slightly smaller than the child's picture. Then tape the waxed paper design to the back of the frame. Help the children hang their "stained glass" panes so that they can notice the effect of the sun shining through them. Ask the children if they think the leaves are beautiful when displayed this way.

Ask the children if they realize that trees are as *useful* to people as they are beautiful. You might ask the children what makes trees so valuable. They will probably respond that we make things with wood from trees, such as homes and furniture. But you might suggest to them other values of trees by asking the following questions.

- Why do we need trees in our cities? *(They add color and natural sculpture; they add oxygen to the air* [remind the children of the lesson Let's Look at a Plant]; *trees act as noise absorbers; they help cut down on the glare from the sun.)*
- Name some animals that live in the trees. *(insects, birds, squirrels)*
- How do you, as a human, use trees? *(for climbing, for building tree houses, to swing from, or to play under its shade)*

You might ask the children how they think—in view of the importance of trees—they can help keep trees as a part of our cities and neighborhoods. *(One way is to be careful to never damage trees.)* Point out to the children that young trees are fragile. We, therefore, must be careful not to weaken them, such as by swinging on branches until they break, or by trying to bend the whole tree over, or by pulling it out of the ground. Another way the

children might help trees survive is to water them when the ground is dry and cracked. Ask the children if they can think of other ways they might help trees.

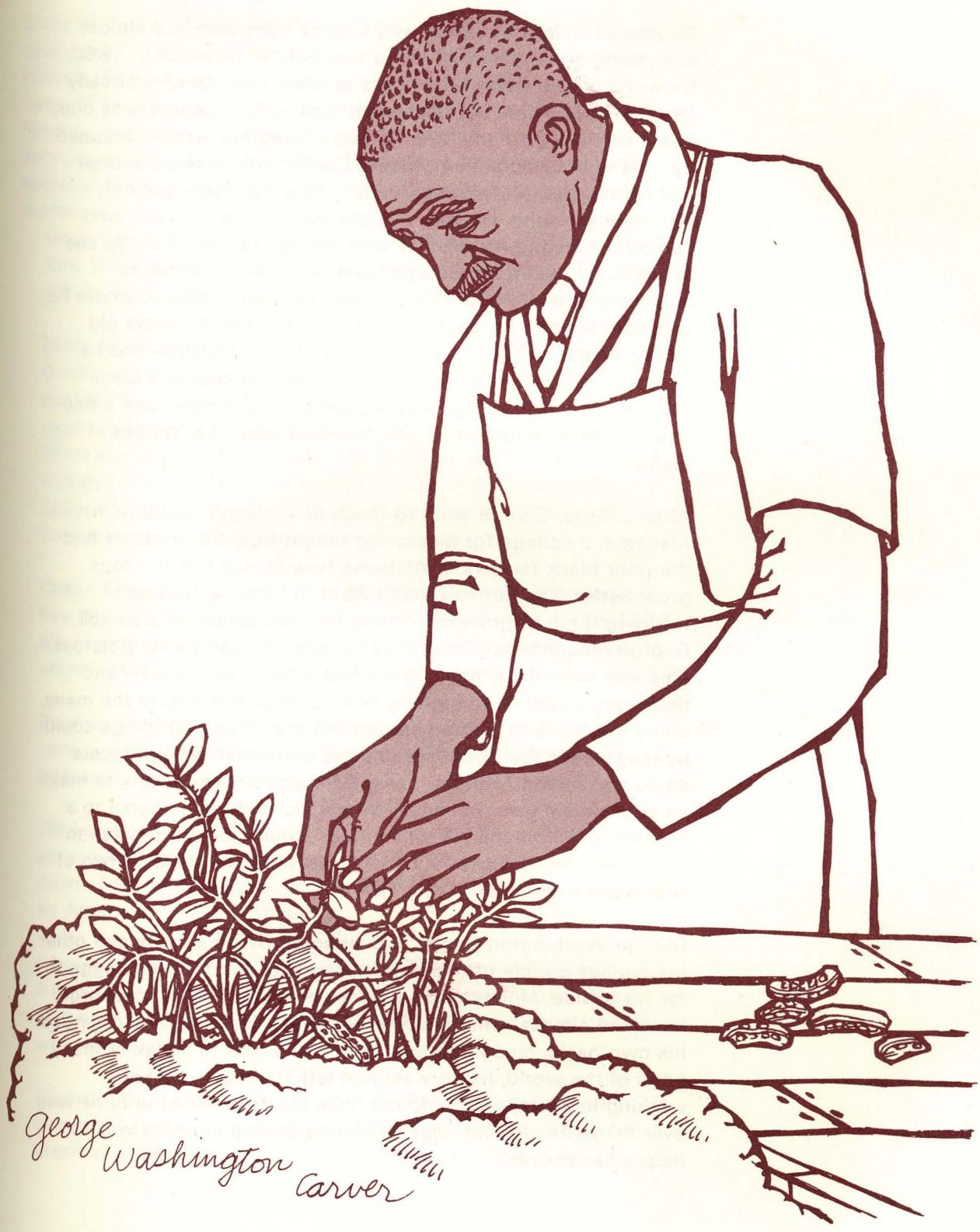
EXTENSION ACTIVITIES

A. Have your more advanced children investigate a dandelion plant in detail to learn what has helped it survive. The dandelion has an excellent combination of traits that help it live and reproduce successfully, even under very difficult conditions. Other weeds have evolved some of the same as well as different traits in order to survive.

Prepare for this activity by asking the children to look for a dandelion patch on their way to and from school. Also ask two or three volunteers to bring in trowels or several old, large spoons for the class to use in connection with the activity. Now you are ready to take the class out to the dandelion patch. Explain to the children that when they reach the dandelions, they should each choose a dandelion plant. First, they should try to pull up the entire plant. This will be difficult to do because the plant's root is very effective. As a matter of fact, if the plants are mature with flowers, the children may find it impossible to uproot them with their hands. If this is the case, help the children dig up several of the plants with a trowel. When several plants have been uprooted, seat the children and pass the plants around for each child to examine carefully. You might want the children to review the various parts of a plant that they learned in the lesson Let's Look at a Plant. Ask the children to deduce how the dandelion's "parachutes," anchoring roots, and large number of seeds help the plant survive as a species.

B. You may wish to discuss with your more advanced children the topic of humans who might be considered "weeds." In a sense these people seem to grow in the "wrong" place or at the "wrong" time, and survive—either physically or culturally—only because of unusual adaptability and tenacity. We do not know as much about the personal traits of those who overcome tremendous odds to become successful in life as we do about the traits of successful weeds, but analogy might be useful to the children. You can cite several examples of such people for the children, pointing out that all people are uniquely beautiful and worthy of cultivation.

Abstracts of the lives of some of these "flowers" of humanity who seemed to the average eye to be "weeds," are given after the brief account of a most unusual genius, George Washington Carver.


George Washington Carver

George Washington Carver was a black man who had almost everything against him when he was born in Missouri in 1860. He was a weak, sickly baby, born of slave parents who already had one young son. His father died just before George was born. Then, while still a baby, George and his mother were kidnapped by a band of hooded men. Moses Carver, who owned George and his mother, Mary, sent a man to look for them, but only George was found. He was brought back to the Carvers, who cared for him and his brother until George ran away at the age of ten. Over the years, George lived with several different families and worked to earn his way. He always stayed where he was near schools he could attend. Still, he was 30 years old before he saved enough money to get into a college—and he had to move to Iowa to enter one that would accept a black student. By then, George was a good pianist, singer, and a fine painter. Most important to him, however, were his studies of plants.

After college, George went to teach at Tuskegee Institute in Alabama, a college for blacks. He taught both his students and the poor black farmers of Alabama how to make their crops grow better. The farmers didn't want to listen to George's teaching them to grow something besides cotton in their soil. George recommended that they try peanuts and sweet potatoes. This was something the farmers had no experience with and they were afraid of something new. George knew from the many, many experiments he had carried out that over 100 things could be made from the sweet potato, and more than 300 products could be derived from the peanut! He actually knew how to make an entire meal from peanuts—from soup and main course to a dessert of ice cream. With time, the farmers began to listen to this wise man, and peanuts and sweet potatoes became two of Alabama's most important crops.

George Washington Carver was honored by presidents and other prestigious people of the world. Scientists and farmers begged for his advice. Money and status were not important to George; he asked almost nothing of the world. He lived alone and tended his own basic, meager needs. Although asked to speak in many parts of the world, he very seldom left Tuskegee. He kept working in his laboratory to continue his discoveries until he was over 80 years old and near death. His driving concern was to help other people.

Some of the following people could be viewed as "weeds" from the beginning of their lives because they had less than the average individual's economic and social endowments. Others became "weeds" later in their lives, either because of physical handicaps or because they were outside the common community of beliefs or opinions of their day. The following persons have been selected because of the diversity of fields and ethnic backgrounds they represent.

Louis Armstrong—Black man born in 1900 to a poor family in New Orleans. During his hectic youth, he learned to play the cornet. He became one of the world's finest jazz trumpeters.

Mary McLeod Bethune—Black woman born in 1875 in North Carolina; one of 16 children in a tenant farmer family. She decided the main difference between blacks and whites was that most whites could read and write and most blacks couldn't. Therefore she worked to educate children and adolescents. She founded and for 38 years was president of Bethune-Cookman College. She also founded the National Council of Negro Women for which she worked for over twenty years.

Cesar Chavez—Contemporary Mexican-American man; one of five children born to a dirt farmer and his wife. Finally, in 1970 after many boycotts, riots, and negotiations he got a union contract for his migrant grape vineyard workers.

Evonne Goolagong—Contemporary young woman born to an aboriginal family in Australia; became a tennis champion of international status.

Jill Lamont—Contemporary white woman; famous skier before an accident that resulted in permanent paralysis from her waist down. She now teaches, and spends her summers teaching on an American Indian reservation.

Abraham Lincoln—White man born 1809 in a log cabin in Illinois; self educated to large degree. He became 16th President of the United States and wrote the Emancipation Proclamation which freed the slaves.

Ricardo Montalban—Contemporary Mexican-American man. He became a famous movie actor and has helped many poor Mexicans, mostly in the area of obtaining employment.

Bethenia Owens—White woman born in 1840 to pioneer parents who settled in Oregon in 1843. She withstood great local criticism and professional male ostracism to become first woman doctor in the West.

Luis Munoz Rivera—Puerto Rican man born in 1859 in Puerto Rico. He was considered the George Washington of his people. He was largely responsible for their independence, and obtaining the protectorate of the United States for Puerto Rico.

Jackie Robinson—Black man born in 1919 on a sharecropper's farm in Georgia. One of six children, he set a college record for the broad jump, and went on to become a college star in track, football, and basketball. He broke the color line in professional baseball with the Dodgers team of the National League.

Sequoyah—American Cherokee Indian man born around 1770 near the Tennessee River. From his earlier skills as a fine painter, silversmith, and designer and maker of superior farm tools, he became a renowned teacher who painstakingly invented the Cherokee alphabet over a 12-year period. As the white men encroached more and more on Cherokee lands, he migrated with other tribesmen, first to Arkansas, and later—when white colonists began encroaching there—to Oklahoma. After the tragedy of the "trail of tears," he patiently worked until he succeeded in reuniting the divided Cherokee nation.

Roger Williams—White man born in 1603 in Wales. He was ordained as a minister among the Calvinists. He was happy to emigrate to the Puritans' Massachusetts Bay colony because it was said to be a place of religious freedom. However, he found the Puritans as rigid as the Anglican Church from which they'd come. They required that everyone worship as their law demanded, and he spoke out against them. He further contended that the Puritans were dwelling on stolen lands they had never paid the Indians for. For his forthright proclamation of these two opinions, Williams was driven back and forth between the New World's New England colonies, and was finally tried in 1635. Banished, he obtained the help of the Narragansett Indians, whose language he had learned. He established Rhode Island, which became a tiny republic within the British Empire, and at the same time, the freest community on this planet at that time. It remained thus for over 100 years, taking in Christians of every persuasion, Jewish people, and atheists.

Simplify several of these summaries for the children, and let them discuss the similar traits these people possess(ed). Then ask the children if they know of anyone personally, such as a relative or a neighbor, who has overcome great obstacles. If possible, try to arrange to have one or two of these people visit the class and talk with them about their life experiences.

SUGGESTED RESOURCE MATERIALS

books for children:

Brandenberg, Aliki (Aliki). *A Weed Is a Flower: The Life of George Washington Carver.* Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1967.

Busch, Phyllis S. *City Lots: Living Things in Vacant Spots.* New York: World Publishing Company, 1970.

Foster, Genevieve. *Abraham Lincoln: An Initial Biography.* New York: Charles Scribner's Sons, 1950.

books for the teacher:

Archer, Jules. *The Unpopular Ones.* New York: Crowell-Collier Press, 1968.

Bontemps, Arna. *Famous Negro Athletes.* New York: Dodd, Mead & Company, 1964.

Dowden, Anne Ophelia. *Wild Green Things in the City. A Book of Weeds.* New York: Thomas Y. Crowell Company, 1972.

Eaton, Jeanette. *Trumpeter's Tale: The Story of Young Louis Armstrong.* New York: William Morrow & Co., Inc., 1955.

Hogner, Dorothy Childs. *Weeds.* New York: Thomas Y. Crowell Company, 1968.

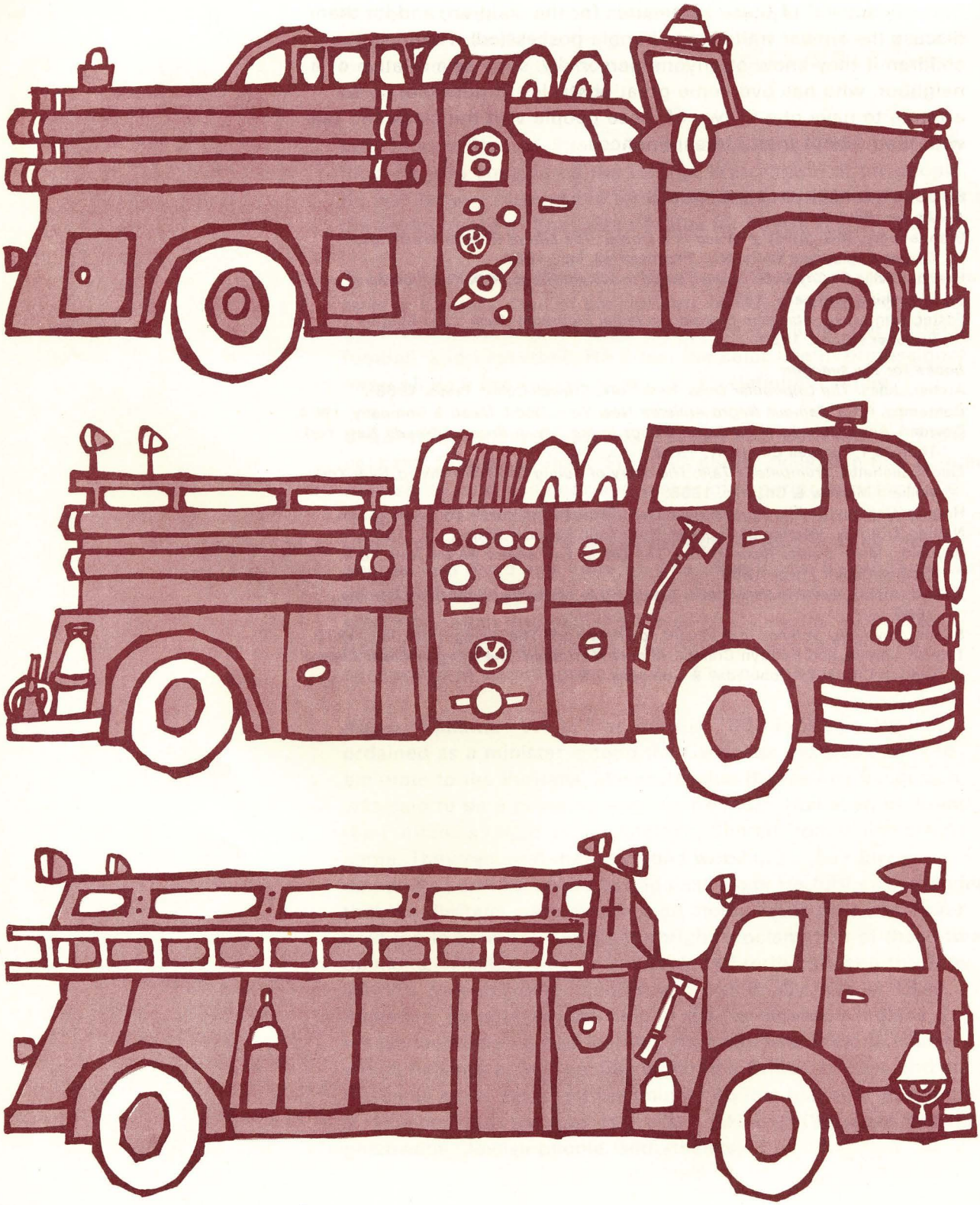
Nathan, Dorothy. *Women of Courage.* New York: Random House, Inc., 1964.

Reynolds, Mark. *Puerto Rican Patriot: The Life of Luis Munoz Rivera.* New York: Crowell-Collier Press, 1969.

Roland, Albert. *Great Indian Chiefs.* Toronto: The Macmillan Publishing Co., Inc., 1966.

Simon, Seymour. *Science in a Vacant Lot.* New York: The Viking Press, Inc., 1970.

Terzian, James, and Kathryn Cramer. *Mighty Hard Road: The Story of Cesar Chavez.* Garden City, N.Y.: Doubleday & Company, 1970.



where's the fire?

10

CONCEPTS

People have other needs that should be fulfilled after basic needs are met. One of these needs is learning.

People have other needs that should be fulfilled after basic needs are met. One of these needs is meaningful work.

STRANDS

We *change* as we learn basic skills for living and more specialized skills for specific careers. Although the *continuity* of our personality remains, through learning we can *adapt* to new situations and *evolve* into more knowledgeable and perceptive people.

PERFORMANCE OBJECTIVES

The child will be able to . . .

- Perform at least five of the seven skills in the simulation of a Firefighters School
- Indicate verbally his/her appreciation of the firefighter's job by citing some of its aspects
- Evaluate very simply his/her learning experiences

MATERIALS

for the Lesson Capsule: fire hats or red construction paper to make 1 hat for each child (See pattern in this lesson.) ⌑ pictures of fire engines ⌑ red and black paint and paintbrushes ⌑ large pieces of cardboard to make a classroom fire engine ⌑ cassette tape recorder and tape ⌑ several pictures of multilevel buildings, preferably ones on fire ⌑ small stepladder ⌑ an old tire ⌑ a hand bell ⌑ several large, white handkerchiefs ⌑ flashlight ⌑ an old garden hose

for Extension Activities: none

LESSON CAPSULE

A. Begin this activity by reminding the children of the ways they have *learned* by using their senses. Talk with them about the meaning of the concept *to learn*—that is, to gain a new skill or new information. As you talk to the children in discussion and proceed through the activities, try to use and stress the words *learn, to learn, learning,* and *learning experience.* Explain that they are now going to try several activities *to learn* three new things. Select three of the following activities, or similar ones, that your children do not already know for them to experience *learning.*

Language skills

- Making the sound of the letter *s* and the visual form (letter) that represents it
- Reciting a nursery rhyme or poem

Motor skills

- Skipping rope to two different rhythms
- Bouncing a ball so many times consecutively

Science skills

- Describing the textures of two different kinds of leaves
- Describing the bark from two different kinds of trees

After the children have tried these activities, help them become aware that they have *learned* three different skills and praise them for doing so. After asking the children what they think they have *learned* in each exercise, discuss the following questions:

1. Which of their senses did they *learn with* in each activity? *(hearing, seeing, touching, tasting, and smelling)*
2. Did they find one *learning experience* more fun than another? If so, why?
3. Will anything they *learned* help them do something else, such as bouncing a ball might help them *learn* to play basketball?

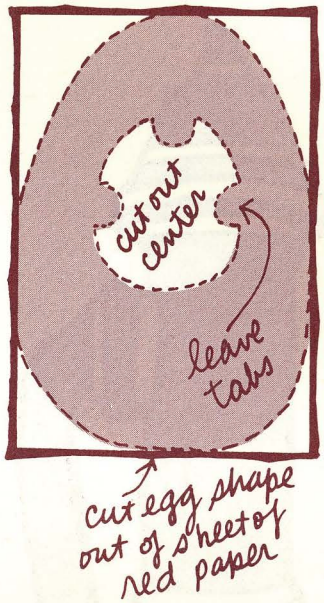
Ask the children to try to name some things they *learned* from their parents that help them now that they are in school, such as talking, walking, and dressing themselves. Ask them to discuss what their lives would be like if they didn't know how to talk; to walk; to dress themselves. You might illustrate the point by trying to converse with the children without speaking.

Using the three questions above, also discuss a few skills the children have learned *outside* the classroom or home, such as crossing a street safely, using a drinking fountain, riding an escalator, and distinguishing a cat from a dog.

B. Begin this second activity by discussing the job of a firefighter with the children. You might ask the children how many would like to be a firefighter. Then ask the children how they would go about learning how to be a firefighter. What do they suppose firefighters have to know? What things do firefighters have to learn to do? Where would they learn how to do those things? Tell the children that they are all going to pretend that they want to be firefighters and they are going to go to Firefighters School to learn how to be one. Talk with the children about the following questions that they should think about as they are in their Firefighters School.

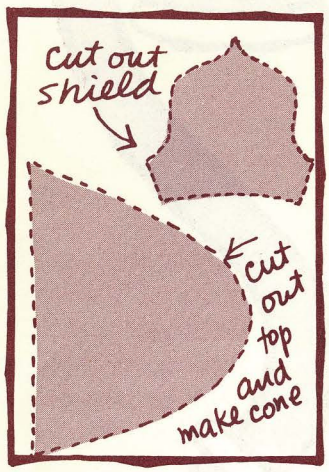
- Why should I *learn* this skill?
- Is this skill fun, hard, or easy to *learn?*
- Will this skill help me do something else?
- Will I feel differently about what I have *learned* after I have *learned* it?
- Can you imagine that these skills would be used in other jobs?

Most likely the children will remember only one or two of these questions. Since these points are the focus for discussion after the activity, the children may be more prepared to evaluate their *learning* by discussing the points once beforehand.

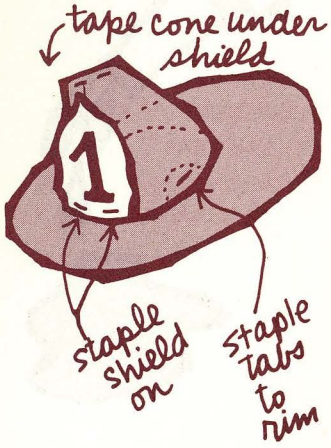


Before beginning this activity, have the children make their own fire hats out of red construction paper. After they have completed their hat project, collect the hats and put them aside until "graduation day."

Also help the children collect pictures from magazines, draw, or take photos of fire engines such as your neighborhood fire engine. You may wish to make a fire engine bulletin board with the pictures. Have the class build a classroom fire engine by using tables, chairs, and cardboard. Cut out large cardboard pieces for the sides of the fire engine. You may wish to have the children paint the sides red and paint "____ SCHOOL FIRE DEPT" in black on one side.



Now the children are ready to go to Firefighters School. Inform the students there are seven skills they must learn. Each of them must perform one of these skills in order to pass the firefighter's test and get a firefighter's hat. Tell them that no one will be told beforehand *which* will be his/her test, so he/she should try to learn all seven skills. Set up five learning stations and try to obtain the help of aides or older students to monitor each learning activity. The seven skills might be covered in one or two days, but if aides are not available, you might set aside a half hour a day for Firefighters School until the children practice all seven skills. Numbered learning stations should be placed around the room, and the children can walk through them at their own rates.



The following are suggested learning station activities. You may wish to make up others after your discussion of what a firefighter needs to know.

1. When the firehouse first receives a call to a fire, the firefighters must learn where the fire is. Therefore, this learning activity is *learning an address.* You will need a tape recorder,

cassette tape, and earphones. Along with instructions, tape-record the same three-line address on a cassette tape ten times in succession. Leave a space between each recording. The tape might play as follows:

> In order to be a firefighter, you must learn to remember an address. Listen very carefully and see if you can find out where the fire is. You may listen as long as you wish. "Hello, there is a fire in my house! My name is Jack Jones, and I live at 66 North Oak Street. Please hurry!"

Call on several of the children to repeat the address for the class. You might want them to make a neighborhood map and find the street on the map.

2. Make four large cardboard cards for the second firefighters' activity. Each should have one word such as the following printed on it: JUMP, WALK, HURRY, CLIMB, CRAWL, RUN. So that a child might *learn these words,* give him/her a card, whisper to him/her what the word is, if necessary, and then have the child act out (pantomime) the word for the rest to follow. Make sure you involve all the children.

3. The third learning station is concerned with *finding and counting the people in a burning building.* Therefore, you might tape several pictures or drawings of burning buildings on the board, with faces drawn in some of the windows. Have the children count the faces and report the number they have discovered in each picture. You may wish to select a specific picture for each of the children to count.

4. As firefighters, the children will need to know how to *work a hose and turn on a fire hydrant.* Draw a life-size fire hydrant on cardboard with the words ON and OFF printed on it. Have the children practice hooking up the hose and turning the hydrant on and off.

5. For the last learning station, combine three motor skills for the children to practice. Have the children *climb up and down a small ladder, crawl through an old tire,* and *walk along a 6-foot-long straight line* chalked or taped on the floor. You may wish to have the children discuss why a firefighter should know how to do these things. Let them use their imaginations. You might want to time them as they try to do these motor skill activities. Perhaps you and the children would enjoy using the sign cards from learning station 4 to add variety to this activity. After the children have gone through the motor skills activity once, you might hold up one of the cards for a child to read and then go through that particular

activity. For example, when the card CLIMB is held up, the child would try to climb up and down the ladder.

When the children think they have mastered these seven skills, they are ready for their firefighter's test. At this time, give each child one task to perform, prompt him/her if necessary so no one misses the reward, and assign him/her a firefighter's hat and a spot on the fire engine or a firefighter's task.

Now let the children have fun playing out a firehouse situation. A phone call is received. Appoint a Fire Chief to announce the address of the fire. There's a fire! The children/firefighters could be dozing and then could respond to the call by donning their hats and jumping on the fire engine. The fire engine should be off, with the children ringing the fire bell as they go. You can add to this role-playing as much or as little as you and the children desire. Some might like to play the parts of a sleeping family that the firefighters rescue. In this case, the firefighters might want to tie handkerchiefs across their faces to keep out the fire's smoke. The Fire Chief should assign the other children duties such as unwinding and carrying the hose, connecting the hose and turning on and off the fire hydrant, carrying the ladder, and bringing the flashlight. Include all the children in the activity or repeat parts of the activity.

After all the children have acted as firefighters, discuss the original seven activities and skills they learned. Refer to the five questions discussed earlier. In each case, help the children evaluate the learning experience itself, and what might *result* from that experience. Even such a simple evaluation of learning processes might help the students become aware that they can transfer skills and information they learn to other activities, that what they learn can produce changes in their lives, that wanting to learn is natural and can be rewarding, and that a firefighter's job is not only dangerous and exciting but also necessary in every community.

EXTENSION ACTIVITIES

A. You may wish to adapt the Firefighters School simulation in the Lesson Capsule for older children by giving them more difficult tasks that relate to the curriculum, and by expanding the discussion following the activity. You might also discuss why the job of a firefighter is so important. Ask whether the children think it is as important as the job of a doctor. You might also want to discuss whether the children think women ought to be firefighters as well as men.

B. With older children, you may wish to spend five minutes telling a story or talking about a subject that interests them, such as dinosaurs, gorillas, or cyclones, just before an expected interruption such as the class bell. Gather the children close to you, and elicit as much enthusiasm as possible. Plan so that the interruption occurs just as you are about to give out some very interesting or exciting information, either pictorial or verbal. Remember which children express regret at the interruption, ask questions, or want to know when they can hear the rest. Then, at another time, gather the children in the same close-knit fashion, and finish the story/discussion. Ask children who followed up on the information or asked questions why they were interested. Ask them why they think they wanted to learn more about the subject—dinosaurs, for example. Give them plenty of time to express themselves; they will undoubtedly reveal some of their attitudes about the discussed topic. Ask if their feelings changed when they found out more information. Did new knowledge change their feelings about all animals? Remind them of the concept "to learn."

Children should leave the discussion understanding that they wanted to learn on their own initiative, that learning can change how they feel about something, and that sometimes it even changes how they act.

C. Take your children to the community fire station or invite a firefighter to your school to discuss some of the skills firefighters should know and how they go about learning them.

SUGGESTED RESOURCE MATERIALS

books for children:

Beame, Rona. *Ladder Company 108.* New York: Julian Messner, 1973.

Goldreich, Gloria and Esther. *What Can She Be? A Lawyer.* New York: Lothrop, Lee & Shepard Company, 1973.

Goldreich, Gloria and Esther. *What Can She Be? A Newscaster.* New York: Lothrop, Lee & Shepard Company, 1973.

Goldreich, Gloria and Esther. *What Can She Be? A Veterinarian.* New York: Lothrop, Lee & Shepard Company, 1972.

Shay, Arthur. *What It's Like to Be a Doctor.* Chicago: Reilly & Lee Books, 1971.

Shay, Arthur. *What It's Like to Be a Fireman.* Chicago: Reilly & Lee Books, 1971.

Shay, Arthur. *What It's Like to Be a Teacher.* Chicago: Reilly & Lee Books, 1971.

books for the teacher:

Schwartz, Alvin. *The City and Its People.* New York: E.P. Dutton & Co., Inc., 1967.

Tamarin, Alfred. *Fire Fighting in America.* New York: Macmillan Publishing Co., Inc., 1970.

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N.J.: Silver Burdett Co., 1971. (Chart 24)

around the world in a day

11

CONCEPTS

The many different people in the world have many different ways of living with their environments.

People are responsible for their use of Earth's provisions.

People can change how they interact with their environments.

STRANDS

Our planet, Earth, has a great *variety* of surfaces and climates, but people everywhere have the same needs. Therefore, groups of people, either as tribes or nations, have *adapted* their ways of living to fit in with the natural environments where they have lived. We see evidence of this in the wide *varieties* of houses, clothing, transportation, and even values that have existed around the world. Despite the wide *variations* in form and in materials used, both the material and nonmaterial aspects of these many cultures also have many *similarities.*

PERFORMANCE OBJECTIVES

The child will be able to . . .

- Express an understanding that there are many people in the world who live in ways different from his/her ways
- Cite at least two differences between two cultures
- Cite one example of cultural adaptation to the natural environment

MATERIALS

for the Lesson Capsule: picture travel books, travel magazines, and travel brochures on selected countries or regions ⌑ opaque projector (if available) ⌑ globe or world map ⌑ colored pins ⌑ drawing paper ⌑ scissors ⌑ felt-tip markers in colors ⌑ crayons or paints ⌑ 1 large shopping or grocery bag per child ⌑ cardboard box, approx. 2' x 1 1/2' ⌑ roll of shelf paper, 13" wide ⌑ 2 dowels, 2' long ⌑ transparent tape ⌑ 4 nails ⌑ tagboard for charts

for Extension Activities: picture books on selected cultures

LESSON CAPSULE

A. A few days before this activity, tell the class that they are soon going to take an imaginary trip to several foreign countries. Help the children decide what places they would like to visit. Four or five countries or differing regions from various continents,

should be selected. After the selections, you will need to find travel books and folders with pictures (preferably in color) of these areas. (**Note:** Local libraries often have a section devoted to this type of book. Be sure to check both the children's and adult's sections. In addition, *National Geographic, Travel, Holiday,* and other travel oriented magazines are good picture sources. Also, collect travel folders from travel agencies and tourist offices for the children to cut up and use.)

Once you have collected the books and pictures, work out a simple itinerary for the class, and on the day of the "trip," show the pictures to the class on an opaque projector. (**Note:** If an opaque projector is not available, simply show the pictures by holding them up, with the children gathered close to you.)

After you have selected the places to visit, you might pinpoint the spots on a globe or world map. Help the children determine whether the pinpointed spots are close to or far from each other in terms of miles. To give the children some idea of this distance, compare it with the miles and number of round trips required to go to a city whose name and distance they would recognize.

Have the children make tickets for their trip by cutting drawing paper in sixths and writing on each strip the name of a country they will visit. You may wish to write the names of the countries on the chalkboard for the children to copy. Have each child prepare for the trip by bringing in a large shopping bag or grocery bag to use as a suitcase. On the day of departure, the children can pack their jackets, sweaters, and whatever else they wish to take along.

Then the children should arrange their chairs in rows, as on a train or plane, and select one child to be the conductor to collect the tickets, or a stewardess to take soft drink orders. After all the arrangements have been completed, the class will be ready to depart. On the trip, show the pictures you have compiled.

As you do so, point out to the children that they are observing not only different natural environments of the world but also different cultures that have grown as the people living under those influences have responded to them. (**Note:** "Culture" as an abstract idea, might be difficult for young children. You might explain it as consisting of two parts. Culture is all the things a person and his/her family and friends *believe in and consider important,* such as what makes good and bad manners, how they feel about nature, religion, and their goals in life. Culture is also all the things a

person and his/her family and friends *do, and how and when they do them,* such as the food they eat and how they eat it; the clothes they wear and the occasions they wear them; the games they play; the kinds of houses they live in; and the kinds of schools they attend.)

You may wish to deal only with the second part of this concept as you work with very young or immature children. Try to do this by pointing out, first, a definitive landform and climate, such as a wide expanse of hot desert, and then relating these to various physical elements in the people's culture, such as transportation, clothing, and animals. For example, if you show a picture of a desert with a caravan of men and camels, you might tell the children that the camels are very important to desert people for the following reasons.

- Camels can retain great amounts of water and thereby live in the desert where there is very little water.
- Camels have big splayed (very flat and spread) feet that make it possible for them to walk easily on shifting sands, thereby providing transportation.
- Camels have sturdy bodies that can carry heavy loads, making them good moving agents.

The specific pictures you collect will help determine the kinds of topics you explore with the children, such as:

- Do you think it is *hot, or cold,* in this country? Why do you think so?
- Is the land *mountainous (hilly), or flat?* How does this affect the way the people live—their houses, food, weather, and transportation?
- What kind of *clothes* are the people wearing? Do you think these help keep the people warm, or cool? Why do you think so? (Relate these to the children's own kinds of clothes worn in the different seasons.)
- What are the people's *houses* like? How do they differ from your homes?
- Can you tell anything about how the people *heat, or cool, their houses? (perhaps by windows, openings under roofs to catch the breezes, places for fires or furnaces)*
- What do the people use for *transportation? (maybe cars, camels, rickshaws, boats, or their feet)*

- Can you tell how the people have *fun?*
- Do the people seem to like to be *in groups, or alone?* (**Note:** This could be a poor question if your pictures are not truly representative of the culture.)
- Are the *babies* usually with only their mothers, or with their mothers and other members of the family? Do you think the babies are cared for by the older children? Are the babies very often shown with strangers?
- Would *you like to participate* in any of the activities you see in these pictures? Which ones? Why?

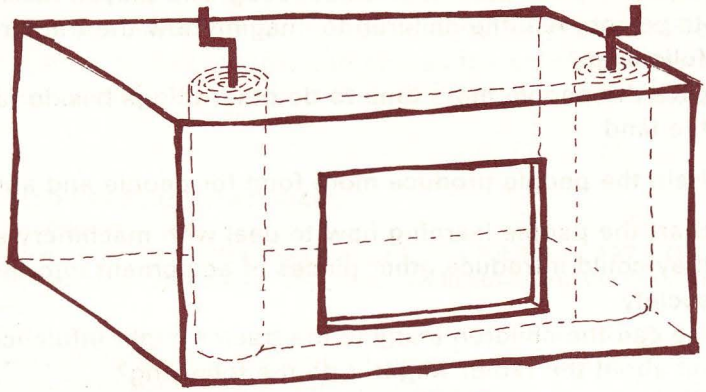
The basic ideas the children should get from this discussion is that there are many peoples in the world who live in ways different from theirs and from each other. *All* these people must live in harmony with each other and with their natural environments.

B. In this activity, the children will make a "movie" of one or more world cultures. Provide the children with a movie-box (directions below), a roll of shelf paper about 13" wide, a variety of travel pictures, transparent tape, felt-tip markers in colors, and crayons. Help the children unroll the shelf paper on the floor, allowing about 15 inches per child. Tell them that this is the film that they took on their trip and now they are going to "develop" the pictures. Explain that they will make a strip of pictures that can tell about something they liked on their trip.

Help the children choose a topic, such as the homes of the people in the various countries they visited, games the people played, or clothes the people wore. Help them organize some of the pictures they now have, and suggest they draw others they found in books. As the children plan their film, assign volunteers to draw or tape various pictures in the proper sequence on the shelf paper.

You or an aide should prepare the movie-box for the children to show their movie to the class. (See diagram in this lesson.) Choose a box with a bottom that is a little wider than the roll of shelf paper. Cut a hole in the front (bottom of the box) a little smaller than the size of the pictures. Next attach two dowels or sections cut from a broom handle to the inside of the box near the opening where the picture will be shown. Use a nail to secure each of the dowels to the bottom of the movie-box. Secure the tops of the dowels to the box with long nails bent in the shape of handles. When the children

have completed the roll of film, it can be secured to the rollers by tape. Roll the film backward and the movie is ready.



Movie Box

Let the children take turns showing the movie as others give a commentary on the specific aspects of the trip. Perhaps your children would like to share their trip with other classes. You might have your children make additional rolls of film on other topics if they are interested.

C. You may wish to have your children use the pictures they have collected to make posters of the various countries (regions) and cultures they are discussing. Perhaps they could compare the houses of various people, games those people play, foods they eat, and clothes they wear. Or the children might compare *how* various people *do* things, for example, sit on the floor to eat. Help the children label their charts and display them around the classroom.

You might look in various song books and have the children sing and discuss the songs from the various countries they have visited. If you have recordings of the music from these countries, play them while the children are showing a film in their movie-box. If the children are interested, help them try to play some of the games that are familiar to the countries they are talking about and, if possible, even sample some of the foods from the various countries.

EXTENSION ACTIVITIES

A. For your more advanced children who have completed activity A in the Lesson Capsule, you might go one step further and introduce the factor of *change.* For example, you might ask the children what might change in a culture if some new technology

were introduced, such as a new piece of farm machinery (a tractor) in an agricultural society that previously had farmed by hand, or a radio in a society that had only talked, sung, and played music person-to-person. Ask the children to imagine how the tractor might do the following.

- Give the people more time to do other things beside farm the land
- Help the people produce more food for people and animals.
- Start the people learning how to deal with machinery so they could introduce other pieces of equipment into their society

What else can the children imagine the tractor might influence? And what about the radio? Might it do the following?

- Help give all the people the same language
- Help spread information the people must not have otherwise, such as health care for themselves, or tips on caring for their cattle
- Give the people entertainment

B. Some of your children might like to look at pictures and/or read about a particular culture. The American Indians and the people of Africa are two cultural realms that have become quite popular in recently published juvenile books. (**Note:** You might use the definition of *culture* given in the Lesson Capsule.)

You might interest the children by using the analogy that culture is like sunglasses. A person looks through his/her sunglasses (culture) at the world and sees everything in a way that is different from the way another person sees it through other (different colored) sunglasses. People of different cultures either see different things or place different emphases on the things they see.

With this "sunglasses effect" in mind, the children could look at pictures and/or read stories and books on a culture different from their own. By comparing this other culture with their culture, the children can see at which points the two obviously differ. You might wish to first have everyone look at pictures and/or read a story together and discuss the cultural differences found, and then have the children work individually with different books and report to the others what they find, along with their interpretations.

C. More advanced children might also like to investigate one aspect of their own heritage to see how it has changed over a

period of time. The subject might be limited to one—perhaps that of children. Have the children ask their parents, grandparents, aunts, and uncles to tell about how they lived when *they* were young. The particular things to inquire about might be the food, clothing, toys, games, songs, and chores the elders can tell about. The children might then report their discoveries to the rest of the class.

SUGGESTED RESOURCE MATERIALS

books for children:

Adoff, Arnold. *MA nDA LA.* New York: Harper & Row Publishers, 1971. (Africa)

Grifalconi, Ann. *The Toy Trumpet.* New York: The Bobbs-Merrill Co., Inc., 1968. (Mexico)

Haley, Gail E. *A Story—A Story.* New York: Atheneum Publishers, 1970. (Africa)

Horn, Axel. *Only Us!* Boston: Little, Brown & Company, 1971. (India)

King, Marian. *Mico and Piccolino.* New York: Harvey House, Inc., Publishers, 1972. (Sicily)

Laurence. *A Village in Normandy.* New York: The Bobbs-Merrill Co., Inc., 1968. (France)

Slobodkin, Louis. *Yasu and the Strangers.* New York: Macmillan Publishing Co., Inc., 1965. (Japan)

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N.J.: Silver Burdett Co., 1971. (Chart 5)

12 let's make it beautiful

CONCEPTS

People have other needs that should be fulfilled after basic needs are met. One of these needs is beauty.

People have other needs that should be fulfilled after basic needs are met. One of these needs is other people.

People can change how they interact with their environments.

Each person must examine how he or she lives to decide whether he or she helps build or destroy the environment.

STRANDS

Changing any area or object to make it more beautiful takes thought, planning, and action. *Interactions* with other people are often required when more than one person will be affected by the outcome or must contribute to the *change* process.

PERFORMANCE OBJECTIVES

The child will be able to . . .

- Imagine and help in planning a future for a part of his/her environment
- Begin to understand and demonstrate by his/her verbal suggestions that plans are limited by practical considerations
- Take responsibility for working with others to accomplish group goals

MATERIALS

for the Lesson Capsule: 3 tablecloths ⌑ decorative objects ⌑ drawing paper and crayons ⌑ several recorded versions of the same song

for Extension Activities: camera and film ⌑ yardstick or measuring tape ⌑ poster board or drawing paper ⌑ cassette recorder and tape

LESSON CAPSULE

A. On three tables, place folded tablecloths and different types of decorative objects, such as pictures, plants, and small sculptured pieces. Ask one child to come up to each table and arrange the objects in the most beautiful way he/she can. Encourage the children to take time to think about their arranging process. Point out to the class that each child *thinks* or reflects so that images will

come to mind. He/She then *acts* by beginning to arrange the objects so that they match his/her "beautiful" mental image. You may wish to do this again and again with as many children as possible participating. Finally, let the children select three of their classmates to rearrange the objects into three different arrangements for the class to enjoy for the remainder of the day.

B. Take the class outside for a walk. Give each child a sheet of drawing paper and crayons. Find an unaesthetic, ugly spot near the school grounds. Then have the children recreate the area to make it look beautiful—first, in their minds and then by drawing on paper. Their drawing should match their "beautiful" mental image of the spot. Now ask the children to compare the drawings with reality. Reinforce the idea that it took *thought* on the part of the children to change the existing scene in their minds, and it would now take *action* to change the scene in reality.

C. Find three or four different recorded versions of a well-known children's song—"Jingle Bells," for example. Styles should be of a distinctive variety, such as rock, popular, or jazz. Have the children react with body movements and hum the tune in the different tempos and rhythms. Then discuss how the different arrangers must have thought about the basic tune before changing it to match their idea of how to make it more interesting and appealing.

D. Have two children volunteer to rearrange and decorate their desks so that they are attractive. Permit them to use anything in the room to fix up their desks while the other children observe. As the two "decorators" proceed, stop them at various points and discuss their thinking processes. Ask them to discuss the steps they have taken to make their desks look attractive. Discuss with the entire class the fact that each child *thought* and *then acted.* Ask the "decorators" if their desks match their idea of a beautiful desk. Why or why not?

EXTENSION ACTIVITIES

A. Divide a more advanced group of children into five or six small groups. Take them outside and ask each group to select a small section of the school grounds that they would like to beautify. The section chosen should probably be one of a predetermined size, not more than 8 feet square. Have each group measure its area and take a picture of it. When again indoors, ask each group if it would like to name its area. Then let each group plan and sketch a beautification plan of its plot on poster board or drawing paper. Hang the beautification plans side-by-side on a bulletin board. Then

have each group meet to think about how it might actually make some of the desired improvements. Talk with the children about the necessity for thought and action. Ask them if they actually *can* change their areas as they planned. Ask them to consider and enumerate their limitations. Try to help the children choose the suggested improvements that would be possible within their limits. Through discussion, let the children discover the steps to be taken to accomplish their beautification projects. You might guide the discussion to cover the following.

- Getting permission from the principal
- Getting cooperation from pertinent school personnel and other children, if necessary. Use of the playground, for example, would require the entire school's cooperation
- Finding out how and where equipment can be obtained in order to carry out the improvements
- Making plans for upkeep, if necessary

If possible, let the children follow up their plans by later evaluating the outcome and amount of commitment they put into the projects.

B. Record the sounds in the classroom for one day. Edit the recording so that there are no periods of long silence. Let the children listen to the recording the next day and ask them if they heard any beautiful sounds. If they think they did not, ask them to think about how they can create beautiful sounds in the classroom. Ask the children if any ugly sounds need to be removed or changed. Try to get the children to suggest some of the characteristics of beautiful sounds and ugly sounds.

SUGGESTED RESOURCE MATERIALS

books for children:

Baylor, Byrd. *When Clay Sings.* New York: Charles Scribner's Sons, 1972.
Yulya. *Bears Are Sleeping.* New York: Charles Scribner's Sons, 1967.

books for the teacher:

Hawkinson, John. *Pastels Are Great!* Chicago: Albert Whitman & Company, 1968.
Hawkinson, John, and Martha Faulhaber. *Music and Instruments for Children to Make.* Chicago: Albert Whitman & Company, Undated.
Weiss, Harvey. *Pencil, Pen, and Brush.* Reading, Mass.: Young Scott Books, 1961.

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N.J.: Silver Burdett Co., 1971. (Chart 18)

walk, watch, and wonder

13

CONCEPTS

People can learn which actions destroy and which actions build up their homes and communities.

People can change how they interact with their environments.

People have other needs that should be fulfilled after basic needs are met. One of these needs is other people.

The more people there are, the more trash and garbage there is.

STRANDS

In places where seasons change, they change without the help of people. Communities *change,* however, because people who live within them either do or neglect to do those things necessary to make the communities the best living places they can be. Our *interactions* with our communities are vitally important if we wish to live in healthy, safe, and beautiful environments.

PERFORMANCE OBJECTIVES

The child will be able to . . .

- List characteristics that he/she thinks make a neighborhood a good place in which to live
- Use a simple map

MATERIALS

for the Lesson Capsule: drawing paper ⌗ crayons ⌗ paint and paintbrushes

for Extension Activities: drawing paper ⌗ paint and paintbrushes ⌗ a map of your area ⌗ 1 duplicated, simplified area map per child

LESSON CAPSULE

A. Provide each child with crayons and drawing paper. Tell the children that the borders of the paper are to represent the walls of the classroom. They are to draw a map of the classroom with all its furnishings as they are presently arranged. Tell them that they should pretend they are looking down from the ceiling at the room and furniture below. You might show them how to mark the position of any windows and doors in the room, perhaps using a particular color or shape. Then let the children fill in the rest of the space with squares and circles to indicate the furnishings.

Emphasize that there is no right or wrong map. Each child will have his/her own view of the room; therefore all the maps will be different. (**Note:** Not every piece of furniture need be shown on the map—only those pieces that the children *decide* to show.) Each child should mark his/her chair with an "X" on the completed map. Hang the children's maps around the classroom so that they can compare their drawings with one another.

If the children enjoyed mapping their classroom, they might like to try mapping their immediate neighborhood. This activity will help them develop an awareness of the community of which they are a part. It will also help them to become aware of themselves as members of that community. First decide on the general area (in terms of blocks) the children are to map. Then arrange to have two or three parents, aides, or older students accompany the class on its mapping project.

Depending on the age and ability of the children, you might have them work either individually or in pairs to design their neighborhood map. (**Note:** The activity can be simplified by having the children map only one block near the school.)

The day you take the children on a walk around the school and nearby blocks, they should notice all the things that are part of the neighborhood. Help them make a list of all the things they might want to include in their map(s). For example:

houses
apartment buildings
churches or synagogues
stores—grocery, drug, ice-cream, and gift
restaurants
laundries
banks
doctors' or dentists' offices
firehouse
movie house
vacant lots
bus stops
parks
playgrounds
fire hydrants

During the walk, encourage the children to be curious about where they are going and what they are seeing. Be careful not to rush them. You might even stop along the way and ask questions. For example:

- Where do you think the people who live in these houses work? Could any of them work nearby?
- How do these people get to work?
- Who do you think plays in the park (or playground)? What do you suppose they do there?

- Why is it nice to have a vacant lot in a neighborhood? Who do you think lives there?

When you return to the classroom, provide the children with large sheets of drawing paper and help them mark off the blocks and streets. Some children may want to fill in street names. Start by marking the school's location. Label it "S." Then let the children fill in the rest of the map with community buildings and other things that they saw on their walk. Perhaps children who live or play in the area can indicate favorite trees, fountains, and hide-outs. If the children wish to label their maps, help them write either names or abbreviations in the proper spaces. The children may also wish to make picture symbols for various buildings, such as a shoe for a shoe store, an ice-cream cone for an ice-cream store, a cross for a church or a star for a synagogue.

B. Tell the children that they are going to pretend for a few minutes that they are members of the Neighborhood Council that is deciding how to improve their neighborhood. Assume that all the members live in this mapped neighborhood and that they are to decide how to improve it for living. Ask the council to think of what they would like to *add* to or *take away* from their neighborhood. The following are some of the things they might consider.

- Creating a park or playground, if there isn't one nearby, or changing an existing one
- Making sidewalks so that children can walk to and from school
- Planting trees and flowers along the streets
- Placing trash cans at strategic points so that people will not litter the streets
- Building, renewing, or tearing down houses or stores in certain sections of the community

If the children reach any concrete decisions, you might help them write their mayor or local planning agency. Or you might invite someone from either of those community offices to visit the class and talk with the children on this topic. Whenever the class takes a trip through the community in the future, you might use the children's maps to figure out where you are going or where you have been.

C. Another way the children might observe their surroundings is to window-watch. On a sunny day, after the children have

participated in active physical exercise, let them line up at the classroom windows. Allow about 15 or 20 minutes, depending on their attention span, for the children to observe the people and landscape. As they watch, discuss the things they see and can conclude from looking out the window.

- Is it hot? cold? How can you tell? *(By touching the window, observing people's actions and dress)*
- Is it windy?
- Did it rain or snow recently? Are there raindrops on the windows or puddles outside?

- What color is the sky?
- What color are the clouds?
- Does it look like it will rain? Why or why not?

- Make a list of any birds, squirrels, or other animals that you see.
- What are those animals doing?
- Can you tell what season it is by looking at the trees? the weeds?

- How many people do you see?
- What are those people doing?
- Do you think what they are doing is part of their job?
- Try to guess where the people you see might be going.
- Try to find examples of why people need other people.

- What kinds of trucks do you see?
- Try to guess where those trucks might be going or where they have come from.
- Do those trucks give you any ideas about why people need other people?

- Where do you see any trash or garbage?
- How do you think the litter got there?
- How do you think the litter will go away? What ways do you suggest for removing or preventing such litter?

After the children have observed the view outside the window for awhile, provide each of them with drawing paper, paint and paintbrushes, and ask them to paint a picture of what they saw. (**Note:** If the children are to participate in Extension Activity A, ask them to save their pictures. Others may wish to take their pictures home.)

EXTENSION ACTIVITIES

A. Your more advanced children might like to study changes in the landscape by continuing their window-watch activity. (See Lesson Capsule activity B.) Children might observe how the scene outside the window changes over several days when the weather conditions are different from the conditions on the first observation day. Then ask the children to paint a series of pictures to show how different the view was each day. Ask them to keep their previous pictures nearby for comparison.

To help the children look for changes, use the following questions as a guide in observing the landscape each day.

- What is the weather like today?
- In what ways does the sky look different today than on the other days?
- Is it darker than usual outside? If so, how does this change the scene? Ask the children if they can see lights in houses, buildings, or on cars and trucks.
- What is different about the way the trees look? Do tree leaves look as if they've turned over? *(Often they do before a rain.)*
- Are there any people in sight? If so, how many?
- How are those people dressed? Is this different from the last time you observed?
- What are the people doing? Where might they be going? Ask the children if they notice any changes in human activities.
- Are the people carrying anything?
- Do the people look happy, sad, angry, or worried? *(They may be worried that they will get wet.)*

When the children have completed their series of pictures, help them display them around the room. Allow time for the children to observe and discuss them.

If you are in an area where the seasons change, you may wish to repeat this activity each time a seasonal change occurs. In that case, you may want to save the children's pictures for this later activity.

B. Arrange with the school personnel to take your children on a bus tour of the neighborhood. As prior preparation, try to obtain a commercial map of your area. From it, make and reproduce a simpler version so that each child can have one. Have each child

note on the map exactly where the bus goes. Before the trip, decide what route you will take. Several times during the trip, have the bus stop so the children can discuss where they are, at that point, on their maps. Try to ascertain what went wrong if there are discrepancies. Then, on the return trip and about six blocks from the school, have the bus stop again. Then have the children use their maps to suggest the most direct way to get back to the school. Have them mark on their maps the route that the bus should take. When you're back in the classroom, have the children discuss their "bus routing." Ask the children if they think they could tell the bus driver how to make the very same trip again, using only their maps. Would they like to try this? Perhaps you could arrange to do it again. Ask the children what they think they learned from the trip. Were the children so preoccupied with marking their maps that they saw little else? Ask them if they also noted events along the way. Help the children add anything else they observed, such as landmarks, to their maps. You might then have the children add all these observations to the original map and hang it in the classroom for further discussion.

SUGGESTED RESOURCE MATERIALS

books for children:

Schick, Eleanor. *City in the Summer.* New York: Macmillan Publishing Co., Inc., 1969.

Schick, Eleanor. *City in the Winter.* New York: Macmillan Publishing Co., Inc., 1970.

books for the teacher:

Gallob, Edward. *City Rocks, City Blocks and the Moon.* New York: Charles Scribner's Sons, 1973.

Scholastic Book Services. *Map Skills Project Book I: For Primary Grades.* New York: Scholastic Magazines, Inc., 1966.

Scholastic Book Services. *Map Skills Project Book II: For Middle Grades.* New York: Scholastic Magazines, Inc., 1967.

rescue the animals

14

CONCEPTS

Sudden or long-lasting disturbances in the home communities of people or other animals may cause them to leave or to die. Sudden or long-lasting disturbances in the home communities of plants may cause them to die.

People can change how they interact with their environments.

Each person must examine how he/she lives to decide whether he/she helps build or destroy the environment.

STRANDS

Whether or not people ever meet wild animals face-to-face, *interrelationships* exist between them. These *interrelationships* are exhibited in such activities as both their vying for the same living space and in people's buying and using wild animals' hides, furs, and oils. People are capable of thinking and planning ahead, while wild animals are not. Therefore it is people who must feel responsible for *changing* their behavior in order to protect wildlife, thereby ensuring that certain species do not perish from our planet.

PERFORMANCE OBJECTIVES

The child will be able to . . .

- Define what is meant by endangered animals
- List at least three things that might threaten wildlife
- Cite at least one reason why all animal species are entitled to continued life

MATERIALS

for the Lesson Capsule: colored construction paper to make tulip and daisy blossoms ⌑ 1 quart-size milk carton per child ⌑ 1 stick, approx. 8" to 10", per child ⌑ 1 paper sail per child ⌑ 1 to 2 endangered animal pictures per child ⌑ modeling clay ⌑ 1 safety pin per child ⌑ 1 piece of heavy cardboard 4" square per child ⌑ tape ⌑ crayons ⌑ scissors ⌑ poster board ⌑ writing paper and envelopes

for Extension Activity: scissors ⌑ glue or tape ⌑ string ⌑ 6 pipe cleaners ⌑ 4 large grocery bags ⌑ several pencils and pads of paper ⌑ several shoe boxes ⌑ crayons ⌑ construction paper

LESSON CAPSULE

A. This activity can take place outdoors in a field or you and the children can turn an area of the classroom into a field, with paper

flowers "growing" in it. If you choose to go outdoors, select a nearby field that has dandelions, blooming clover, or some kind of blooming wild flower in it. If you must stay indoors for this game, have the children draw tulip or daisy blossoms on colored construction paper and cut them out. Scatter the paper blossoms on the floor in an open area of the classroom.

Have the children form a circle in the middle of the "blooming" area. Tell them that they are going to play a game in which they are to imagine that these flowers (dandelions, daisies, clover, or whatever) are *all* of this kind of flower left in the world. Have three volunteers run around the inside of the circle, pretending to be *airplanes.* These airplanes are spraying insecticides (poison) to kill the insects on the flowers. As they run, the children might make airplane noises. To symbolize the destruction to the field of flowers by the insecticides, each child should pick three blossoms. Then each of these three children should choose a child in the circle to take his/her place. The three new children inside the circle should pretend to be *bulldozers* that have come to prepare the area for the building of some new houses. These children should make bulldozer actions and loud, machine noises. Then each of these children should pick three blossoms and choose another child to take his/her place in the circle. The three new children might pretend to be *picnickers.* They might sit in the field a minute or two and act as if they were eating their picnic lunch. Then they should pick three flowers—maybe to give to friends.

The game can continue as other children choose destructive forces, such as workmen building a road through the field, or a fire that gets out of control when someone throws a lighted match. You and the children can choose any situation that would endanger the continued existence of the field. Continue the game until only a few flowers remain.

During the game, the children who make up the circle may sing the following lyrics to the tune of "The Farmer in the Dell."

The airplane's o'er the field,
The airplane's o'er the field,
Heigh-ho, Not merr-i-o,
The airplane's o'er the field.

Bulldozers in the field,
Bulldozers in the field,
Heigh-ho, Not merr-i-o,
Bulldozers in the field.

Picnickers in the field,
Picnickers in the field,
Heigh-ho, Not merr-i-o,
Picnickers in the field.

(Other verses change to suit the actions of the children.)

After the game, draw the children's attention to the few flowers remaining inside the circle. Ask them what they think might happen if they picked all the remaining flowers. Remind the children that they are to imagine that these are the only flowers of this kind remaining in the whole world. Ask them if they would miss the flowers if no new ones came up the following year. Ask if they think any animal life would suffer if there were no more dandelions or clover. How about honey bees? cows? Ask the children why they think all plants and animals are important. *(They are parts of food chains; they are also beautiful and interesting.)*

Ask the children how they would feel if animals, such as tigers were in danger of being destroyed instead of dandelions or clover. You might explain that the same general factors that caused the flowers to be in danger can cause animals to be in danger also.

- changes in and loss of habitat
- pesticides and other poisons
- roads
- break in the animal's food chain
- drying up of water holes
- fires
- hunters

The children might be able to think of still other factors, such as diseases and heavy predation by other animals. Point out that most of the changes in the list are *caused* by people or *can be corrected* by people.

Children generally are sympathetic to most animal life but develop negative attitudes as they learn of and adopt the attitudes of many adults who categorize animals as good or bad. It is therefore necessary to bring to the children's consciousness the fact that animals are neither good nor bad; they are merely other forms of animal life. Unfortunately, many people also substitute folklore for facts. To learn the real facts, we are now using scientific means of studying animals in the wild, such as tagging, banding, painting (around birds' necks), and telemetry (transmission of radio signals from a band around an animal's neck).

LOST AND ALMOST-LOST LIVING EARTH TREASURES

THREATENED SPECIES

Though not in immediate danger of extinction, some species of animals have been depleted or are decreasing in an alarming rate. These species are classified as "threatened."

MAMMALS

BAT, OZARK BIG-EARED
BAT, SPOTTED
BAT, VIRGINIA BIG-EARED
BEAR, GLACIER
BEAR, GRIZZLY
BIGHORN, CALIFORNIA
BIGHORN, PENINSULAR
ELK, TULE
RAT, KEY LARGO WOOD
SEAL, CARIBBEAN MONK
SEAL, GUADALUPE FUR
SEAL, HAWAIIAN MONK
SEAL, RIBBON
SEA OTTER, SOUTHERN
SQUIRREL, EVERGLADES FOX
SQUIRREL, KAIBAB
VOLE, BEACH MEADOW
VOLE, BLOCK ISLAND MEADOW
WOLF, MEXICAN

BIRDS

CRANE, FLORIDA SANDHILL
FALCON, PRAIRIE
FINCH, WALLOWA GRAY-CROWNED ROSY
GOOSE, TULE WHITE-FRONTED
HAWK, P. R. SHARP-SHINNED
HERON, FLORIDA GREAT WHITE
OWL, NEWTON'S PUERTO RICAN SCREECH
OWL, SPOTTED
PRAIRIE CHICKEN, LESSER
PRAIRIE CHICKEN, NORTHERN GREATER
RAIL, CALIFORNIA BLACK
SHEARWATER, NEWELL'S MANX
SPARROW, IPSWICH
WARBLER, ELFIN WOODS
WARBLER, GOLDEN-CHEEKED

FISHES

BASS, ROANOKE
BASS, SUWANNEE
CAVEFISH, OZARK
CISCO, BLACKFIN
CISCO, DEEPWATER
DACE, DESERT
DARTER, NIANGUA
DARTER, SHARPHEAD
DARTER, TRISPOT
DARTER, TUSCUMBIA
GAMBUSIA, SAN MARCOS
GRAYLING, ARCTIC
MUDMINNOW, OLYMPIC
PUPFISH, NEVADA
SCULPIN, PYGMY
SPINEDACE, LITTLE COLORADO
STURGEON, LAKE
SUCKER, MODOC
SUCKER, WHITE RIVER
TROUT, BLUEBACK
TROUT, HUMBOLDT CUTTHROAT
TROUT, LITTLE KERN GOLDEN
TROUT, RIO GRANDE CUTTHROAT
TROUT, SUNAPEE

REPTILES AND AMPHIBIANS

CROCODILE, AMERICAN
FROG, PINE BARRENS TREE
FROG, VEGAS VALLEY LEOPARD
LIZARD, ST. CROIX GROUND
SALAMANDER, JEMEZ MOUNTAIN
SALAMANDER, LIMESTONE
SALAMANDER, SHASTA
SALAMANDER, TEHACHAPI SLENDER
TOAD, BLACK
TURTLE, BOG
TURTLE, GREEN

ENDANGERED SPECIES

No less than 109 mammals, birds, fishes, reptiles, and amphibians are threatened with extinction in the United States.

MAMMALS

BAT, HAWAIIAN HOARY
BAT, INDIANA
COUGAR, EASTERN
DEER, COLUMBIAN W. TAILED
DEER, KEY
FERRET, BLACK-FOOTED
FOX, SAN JOAQUIN KIT
MANATEE, FLORIDA
MOUSE, SALT MARSH HARVEST
PANTHER, FLORIDA
PRAIRIE DOG, UTAH
PRONGHORN, SONORAN
RAT, MORRO BAY KANGAROO
SQUIRREL, DELMARVA FOX
WHALE, BLUE
WHALE, BOWHEAD
WHALE, FINBACK
WHALE, GRAY
WHALE, HUMPBACK
WHALE, RIGHT
WHALE, SEI
WHALE, SPERM
WOLF, EASTERN TIMBER
WOLF, N. ROCKY MOUNTAIN
WOLF, RED

BIRDS

AKEPA, HAWAII
AKEPA, MAUI
AKIALOA, KAUAI
AKIAPOLAAU
BOBWHITE, MASKED
CONDOR, CALIFORNIA
COOT, HAWAIIAN
CRANE, MISSISSIPPI SANDHILL
CRANE, WHOOPING
CROW, HAWAIIAN
CREEPER, MOLOKAI
CREEPER, OAHU
CURLEW, ESKIMO*
DUCK, HAWAIIAN
DUCK, LAYSAN
DUCK, MEXICAN
EAGLE, SOUTHERN BALD
FALCON, AM. PEREGRINE
FALCON, ARCTIC PEREGRINE
FINCHES, LAYSAN AND NIHOA
GALLINULE, HAWAIIAN
GOOSE, ALEUTIAN CANADA
GOOSE, HAWAIIAN (nene)
HAWK, HAWAIIAN (io)
KITE, FLORIDA EVERGLADE
HONEYCREEPER, CRESTED
MILLERBIRD, NIHOA
NUKUPUUS, KAUAI AND MAUI
OO, KAUAI (oo aa)
OU
PALILA
PARROT, PUERTO RICAN
PARROTBILL, MAUI
PELICAN, BROWN
PETREL, HAWAIIAN DARK-RUMPED
PIGEON, PUERTO RICAN PLAIN
PRAIRIE CHICKEN, ATTWATER'S GREATER
RAIL, CALIFORNIA CLAPPER
RAIL, LIGHT-FOOTED CLAPPER
RAIL, YUMA CLAPPER
SPARROW, CAPE SABLE
SPARROW, DUSKY SEASIDE
SPARROW, SANTA BARBARA SONG
STILT, HAWAIIAN
TERN, CALIFORNIA LEAST
THRUSH, LARGE KAUAI
THRUSH, MOLOKAI*
THRUSH, SMALL KAUAI
WARBLER, BACHMAN'S
WARBLER, KIRTLAND'S
WHIP-POOR-WILL, P.R.
WOODPECKER, IVORY-BILLED*
WOODPECKER, RED-COCKADED

FISHES

BONYTAIL, PAHRANAGAT
CHUB, HUMPBACK
CHUB, MOHAVE
CISCO, LONGJAW
CUI-UI
DACE, KENDALL WARM SPRINGS
DACE, MOAPA
DARTER, FOUNTAIN
DARTER, MARYLAND
DARTER, OKALOOSA
DARTER, WATERCRESS
GAMBUSIA, BIG BEND
GAMBUSIA, CLEAR CREEK
GAMBUSIA, PECOS
KILLIFISH, PAHRUMP
PIKE, BLUE
PUPFISH, COMANCHE SPRINGS
PUPFISH, DEVILS HOLE
PUPFISH, OWENS RIVER
PUPFISH, TECOPA
PUPFISH, WARM SPRING
SQUAWFISH, COLORADO RIVER
STICKLEBACK, UNARMORED THREESPINE
STURGEON, SHORTNOSE
TOPMINNOW, GILA
TROUT, ARIZONA (Apache)
TROUT, GILA
TROUT, GREENBACK CUTTHROAT
TROUT, LAHONTAN CUTTHROAT
TROUT, PAIUTE CUTTHROAT
WOUNDFIN

REPTILES AND AMPHIBIANS

ALLIGATOR, AMERICAN
BOA, PUERTO RICAN
LIZARD, BLUNT-NOSED LEOPARD
SALAMANDER, DESERT SLENDER
SALAMANDER, SANTA CRUZ LONG-TOED
SALAMANDER, TEXAS BLIND
SNAKE, SAN FRANCISCO GARTER
TOAD, HOUSTON

*May be extinct

EXTINCT SPECIES

Until the 17th century, the 62 animals listed below flourished in the United States and Puerto Rico. Now they are extinct—and most disappeared in the 20th century.

MAMMALS

BAT, LEAF-NOSED
BIGHORN, BADLANDS
ELK, EASTERN
ELK, MERRIAN'S
FOX, NORTHERN SWIFT
FOX, S. CALIFORNIA KIT
ISOLOBODON, PUERTO RICAN
MINK, SEA
NESOPHONTES, PUERTO RICAN
SEA COW, STELLER'S
VOLE, GULL ISLAND
WHALE, ATLANTIC GRAY
WOLF, BUFFALO
WOLF, CASCADE MOUNTAIN
WOLF, EASTERN RED
WOLF, MOGOLLON MOUNTAIN
WOLF, S. ROCKY MOUNTAIN
WOLF, TEXAS GRAY

BIRDS

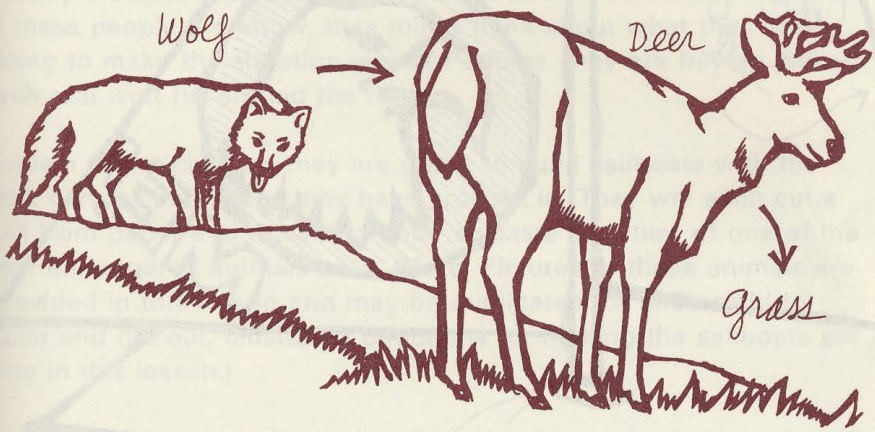
AKEPA, OAHU
AKIALOA, HAWAII
AKIALOA, LANAI
AKIALOA, OAHU
ALAUWAHIO, LANAI
AMAKIHI, GREATER
APAPANE, LAYSAN
FINCH, GROSBEAK
HEN, HEATH
KIOEA
KOAFINCH, GREATER
KOAFINCH, LESSER
MAMO, BLACK
MAMO, HAWAII
MILLERBIRD, LAYSAN
NUKUPUU, OAHU
OO, HAWAII
OO, MOLOKAI
OO, OAHU
PARAKEET, CAROLINA
PARAKEET, LOUISIANA
PARAKEET, MAUGE'S
PARROT, CULEBRA P. R.
PIGEON, PASSENGER
RAIL, LAYSAN
RAIL, SANDWICH
THRUSH, LANAI
THRUSH, OAHU
ULA-AI-HAWANE

FISHES

CHUB, THICKTAIL
KILLIFISH, PAHRUMP RANCH
PUPFISH, LEON SPRINGS
SCULPIN, UTAH LAKE
SPINEDACE, BIG SPRING
SPINEDACE, PAHRANAGAT
SPRINGFISH, ASH MEADOWS
SPRINGFISH, RAYCRAFT RANCH
SUCKER, HARELIP

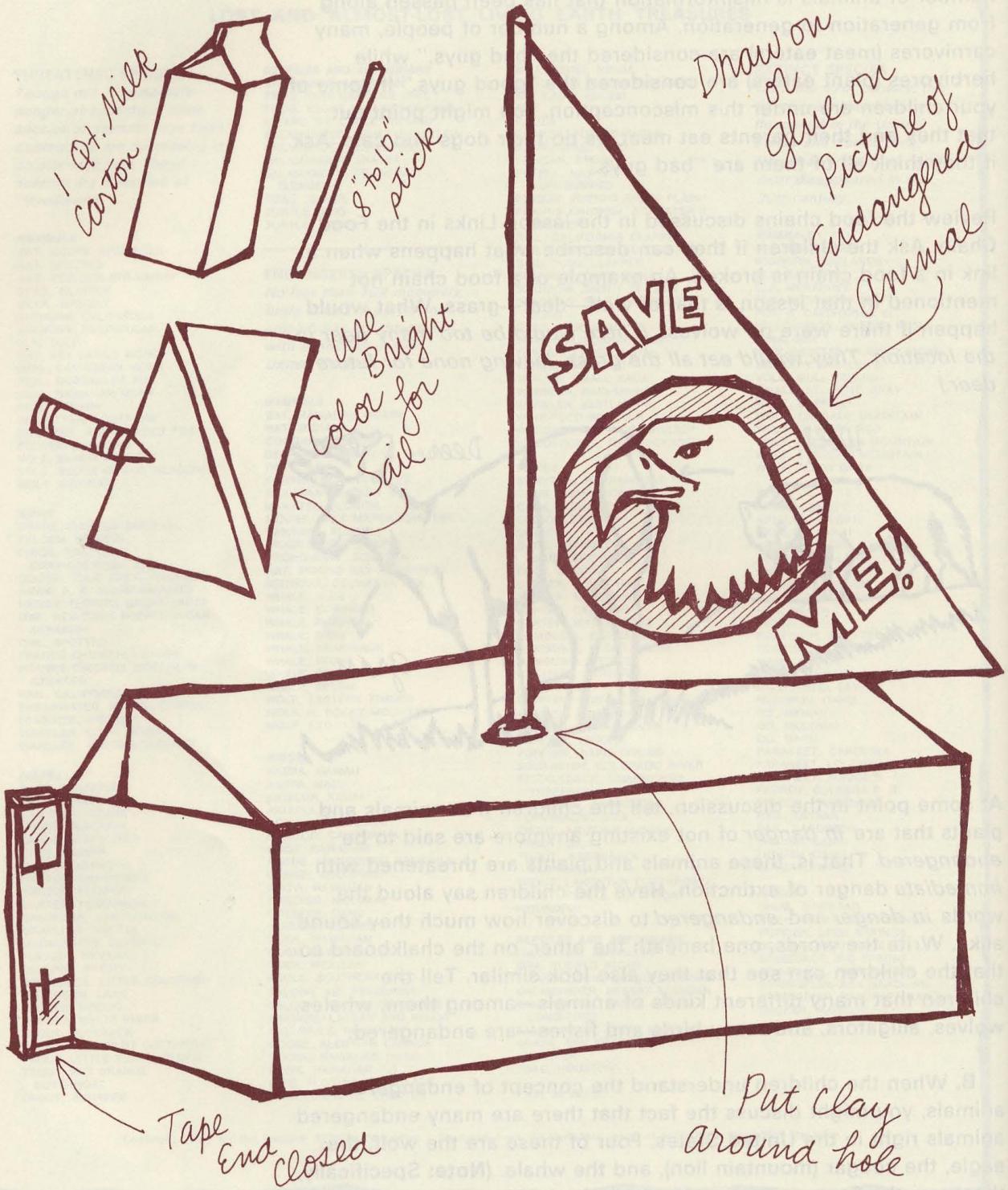
We are learning that much of what we thought were facts about a number of animals is misinformation that has been passed along from generation to generation. Among a number of people, many carnivores (meat eaters) are considered the "bad guys," while herbivores (plant eaters) are considered the "good guys." If some of your children are under this misconception, you might point out that they and their parents eat meat, as do their dogs and cats. Ask if they think all of them are "bad guys."

Review the food chains discussed in the lesson Links in the Food Chain. Ask the children if they can describe what happens when a link in a food chain is broken. An example of a food chain not mentioned in that lesson is that of wolf—deer—grass. What would happen if there were no wolves? *(There would be too many deer in the location. They would eat all the grass, leaving none for future deer.)*



At some point in the discussion, tell the children that animals and plants that are *in danger* of not existing anymore are said to be *endangered.* That is, these animals and plants are threatened with *immediate* danger of extinction. Have the children say aloud the words *in danger* and *endangered* to discover how much they sound alike. Write the words, one beneath the other, on the chalkboard so that the children can see that they also look similar. Tell the children that many different kinds of animals—among them, whales, wolves, alligators, and many birds and fishes—are endangered.

B. When the children understand the concept of endangered animals, you might discuss the fact that there are many endangered animals right in the United States. Four of these are the wolf, the eagle, the cougar (mountain lion), and the whale. (**Note:** Specifically, these are the Eastern Timber, Northern Rocky Mountain, and Red


1 Qt. Milk Carton
8" to 10" stick
Use Color Bright for Sail
Draw on or Glue on Picture of Endangered Animal
SAVE
ME!
Tape End closed
Put clay around hole

Wolves; the Southern Bald Eagle; the Eastern Cougar; and eight species of whale.)

Ask the children if they feel sympathetic toward the serious plight of these animals. Ask what they can do about this situation. *(They will probably feel helpless and not know how to help them.)* You can inform them that there *is* a way they can help—they can tell others.

For this part of the activity, have each child bring in a quart milk carton. Each child will also need a fairly straight stick, from 8 to 10 inches long (approximately from their finger tips to their elbows in length). Explain to the children that they are going to carry out an activity that will be helpful in informing others of endangered animals. Explain that one reason these and many other animals *are* almost extinct—no longer in existence as a species—is that many usually thoughtful persons do not know about this serious situation. If these people did know, they might think about what they are doing to make the situation worse. Perhaps, they are buying jackets with real wolf fur around the hoods.

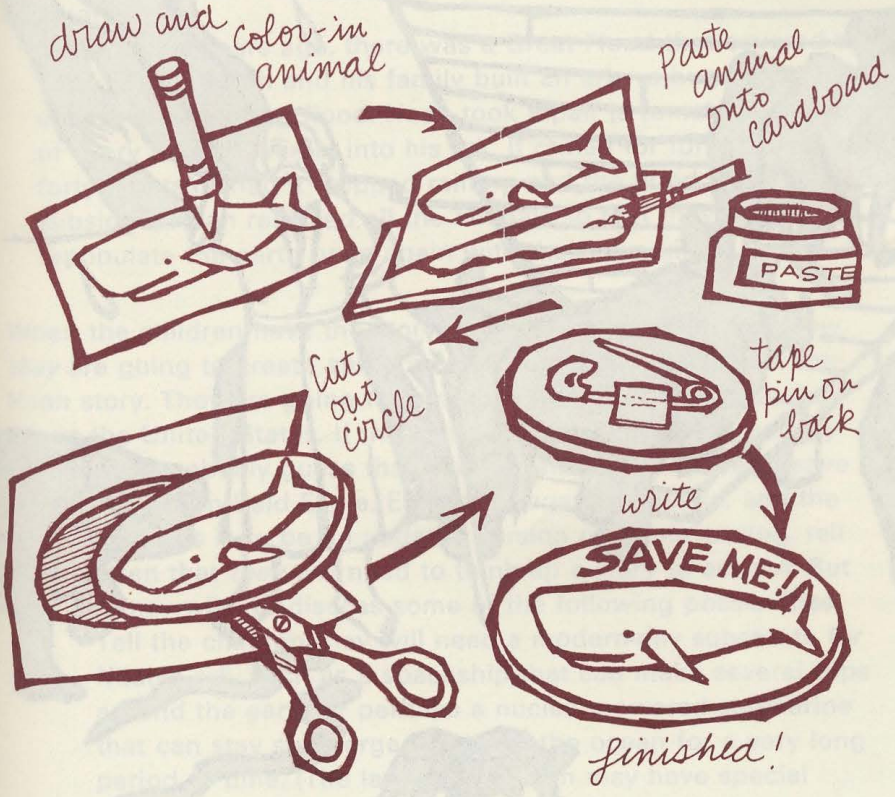
Explain to the children they are going to build sailboats with the milk cartons and sticks they have brought in. They will each cut a sail from paper and draw and color or paste a picture of one of the four endangered animals on it. (**Note**: Pictures of these animals are provided in this lesson and may be duplicated for each child to color and cut out. Illustrated directions for making the sailboats are also in this lesson.)

Ask the children to color their sails with crayons so that people will be able to see them more easily. Some children may want to write the phrase "Save Me" on their sails. Write the words on the chalkboard for them to copy. While the children are working, you and an aide might go around the classroom, taping the tops of the milk cartons closed. Cut a small hole in the center of one of the long sides of each carton so that the children can insert a stick to hold up the sail. You might have them put clay around the opening to hold the stick upright. Help each child punch holes in the sails where they are to insert the stick. When the boats are assembled, you may wish to let the children sail them in a nearby stream, pond, or fountain. Afterwards, allow the children to take the boats home so that they can sail them on their own. Tell them not to forget to take the boats out of the water so that they will not litter and pollute the water.


SAVE ME!
Eagle
Cougar
Wolf
SAVE ME!
Whale

C. Your children may wish to start their own school or community campaign to help alert people to the plight of endangered animals. They may wish to focus on the four animals that they have already talked about or choose other animals that are classified as endangered. Help the children find out about any new animal choices that they make. Perhaps your class may wish to focus on one animal as "class mascot" and set about to do something to help save this animal. Help the children find out where this animal lives or used to live and what caused it to become endangered. They might like to find out how many of these animals scientists think are left in the world. Suggest to the children that they make posters to alert the public to the plight of this endangered animal.

D. As part of a campaign to alert the public to endangered animals, suggest that the children make animal buttons. Have each child choose one endangered animal. They can use the duplicated pictures from this lesson capsule or they can draw others.



Have the children color their animals pictures and then help them mount these on heavy cardboard squares or circles. The children

Noah and the Ark

can write (print) the words "Save Me" on the front of their buttons. Attach a safety pin to the back of each with masking tape to make a button. If the children have old "slogan" buttons at home, have them bring these to school to use instead of the cardboard. They can paste their endangered animal picture on the front of the old button. Suggest the children wear their buttons at school and at home.

E. Children can write their state or federal representatives to help pass protective laws that will help save these endangered animals. The children may wish to write about a specific animal. Suggest they color and paste a picture of the animal on their letters.

EXTENSION ACTIVITY

Begin this activity with more advanced children by reviewing the story of Noah. A number of children will already know the highlights of this ancient tale. You might use the following summary.

> Many, many years ago, there was a Great Flood that covered the whole earth. Noah and his family built an ark—a huge ship that could withstand the flood. Noah took a pair (a female and male) of every kind of animal into his ark. It rained for forty days and forty nights. When it stopped raining and the flood waters subsided, Noah released all the animals so that they could repopulate the earth once again with their own kind.

When the children have the story in mind, inform them that now *they* are going to create and act out an up-to-date version of the Noah story. They are going to save the endangered animals that live in the United States. If the children have carried out activity B, they will probably guess that the four animals they are to save are the Southern Bald Eagle, Eastern Cougar, the whale, and the wolf. Since this is to be an updated version of animal-saving, tell the children that *they* will need to think up a story to act out. But first you may wish to discuss some of the following possibilities.

- Tell the children they will need a modern-day substitute for Noah's ark, such as a spaceship that can make several trips around the earth or perhaps a nuclear-powered submarine that can stay submerged beneath the ocean for a very long period of time. (The latter suggestion may have special appeal for the children because they might imagine the whales playing alongside the ship and the present-day Noah and crew watching over them.)

- Ask the children if they think it would be helpful if the newspapers, radios, and television stations knew about their plan for saving the endangered animals. If so, perhaps they should hold a press conference. Help them plan what they would tell the millions of people who would hear and see them on TV. (They may want to state their reasons for going away and tell what animals they are taking. Also they should tell the press what they hope people will do while they are gone.)
- How will the present-day Noah and his crew be able to determine when it is safe to return with the animals? *(They might be informed by radio that laws have been passed and enforcement agencies created for the protection of these animals.)*
- Perhaps the people left behind should plan a gala reception for the return of the second Mr. Noah, his crew, and animals. What might this accomplish? *(Honor Mr. Noah and his crew for what they have done, and remind all the world's people that these and other animals can again be threatened with extinction if people aren't careful to protect them.)*

The discussions are the most important part of this activity, since they should help instill in the children positive values toward wildlife. The children should also have fun selecting and acting out various roles in their modern-day story of Noah. You can be as detailed with the play as you like. Perhaps you can help the children make simple whiskers out of pipe cleaners for those playing the cougars; large, flipping tails can be drawn on and cut out of large grocery bags for those playing the whales; wings for the eagles can be made the same way as the tails for the whales; ears can be cut from paper to represent the wolves. The newspaper, radio, and televison reporters can be given paper and pencil to take "pretend" notes on the events. The TV crewmen might stand on a couple of desks and aim their shoe box TV cameras at Mr. Noah and his crew. The spaceship or submarine might be made by rearranging several desks and tables in the room.

After the children have decided on their story and have acted it out, ask them if they see any similarity between Mr. Noah, his crew, and what they did and the national parks and wildlife refuges and the people who run them. *(People who run these two kinds of places help protect wild animals. Visitors to national parks are not allowed to hunt or kill animals. In wildlife refuges, only a predetermined number of visitors are allowed to hunt and kill certain animals.)*

SUGGESTED RESOURCE MATERIALS

books for children:

Francoise. *The Big Rain.* New York: Charles Scribner's Sons, 1961.

McClung, Robert M. *Screamer, Last of the Eastern Panthers.* New York: William Morrow & Co., Inc., 1964.

McClung, Robert M. *Thor, Last of the Sperm Whales.* New York: William Morrow & Co., Inc., 1971.

Mizumura, Kazue. *The Blue Whale.* New York: Thomas Y. Crowell Company, 1971.

books for the teacher:

Editors of Time-Life Books. *Vanishing Species.* New York: Time-Life Books, 1974.

Fisher, James, Noel Simon, and Jack Vincent. *The Red Book: Wildlife in Danger.* London: Collins, 1969.

Laycock, George. *America's Endangered Wildlife.* New York: W. W. Norton & Company, Inc., 1969.

Milne, Lorus J., and Margery Milne. *The Cougar Doesn't Live Here Any More.* Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1971.

National Wildlife Federation. *Endangered Species.* Washington, D. C.: National Wildlife Federation, 1974.

picture charts:

Environmental Education, NEED Picture Packet. Morristown, N. J.: Silver Burdett Co., 1971. (Charts 1,10,12,19)