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ABSTRACT

This fifth grade environmental education guide is one of a series of guides, K-12, which were developed by teachers to help introduce environmental education into the total curriculum. The guides are supplementary in design; it is the teacher's decision when the concepts, objectives, activities, and resources may best integrated into the existing classroom curriculum. his guide contains a series of episodes (minilessons), each having a number of suggested in- and out-of-class learning activities. The episodes are built around 12 major environmental concepts that form a framework for each grade or subject area, as well as for the entire K-12 program. Although the same concepts are used throughout the K-12 program, emphasis is placed on different aspects of each concept at different grade levels. The fifth grade guide focuses on aspects such as sun, energy, ecosystems, industrial growth, speech, and urban aesthetics. Each of the 12 concepts is covered in one of the episodes contained in the guide. Further, each episode offers subject area integration, subject area activities, interdisciplinary activities, cognitive and affective behavioral objectives, and suggested references and resource materials useful to teachers and students. An appendix containing related games is included. (Author/TK)

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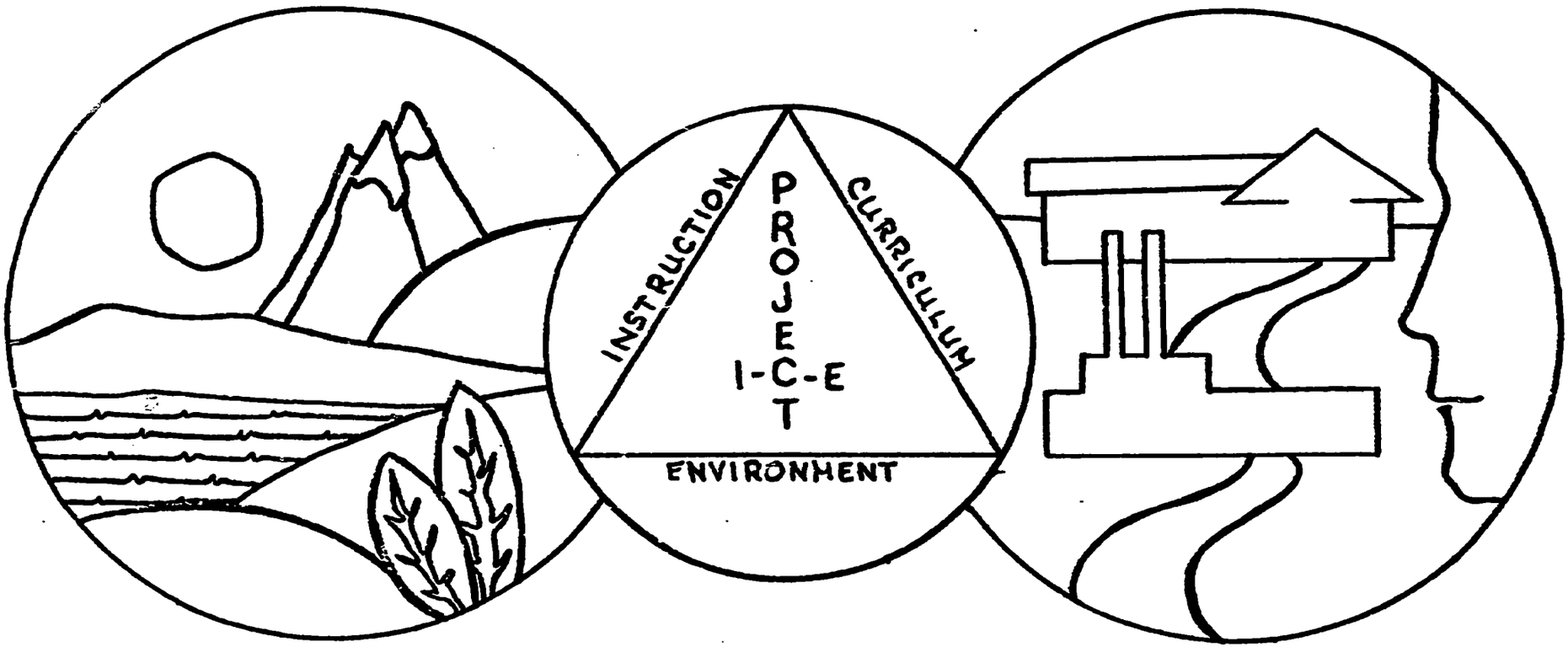
ENVIRONMENTAL EDUCATION GUIDE



GRADE FIVE

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FORWARD TO PROJECT I-C-E ENVIRONMENTAL EDUCATION GUIDES

In 1969, the First Environmental Quality Education Act was proposed in the United States Congress. At the time of the introduction of that legislation, I stated:

"There is a dire need to improve the understanding by Americans of the ominous deterioration of the Nation's environment and the increasing threat of irreversible ecological catastrophe. We must all become stewards for the preservation of life on our resource-deficient planet."

In the three years since the Environmental Education Act was passed by the Congress, much has happened in the United States to reinforce the great need for effective environmental education for the Nation's young people. The intensive concern over adequate energy resources, the continuing degradation of our air and water, and the discussion over the economic costs of the war against pollution have all brought the question of the environmental quality of this nation to a concern not merely of aesthetics but of the survival of the human race.

The intense interest by the public in the quality of our lives as affected by the environment clearly indicates that we cannot just use incentives and prescriptions to industry and other sources of pollution. That is necessary, but not sufficient." The race between education and catastrophe can be won by education if we marshall our resources in a systematic manner and squarely confront the long-term approach to saving our environment through the process of education.

As the incessant conqueror of nature, we must reexamine our place and role. Our world is no longer an endless frontier. We constantly are feeling the backlash from many of our ill-conceived efforts to achieve progress.

Rachel Carson's theme of "reverence for life" is becoming less mystical and of more substance as our eyes are opened to much of the havoc we have wrought under the guise of progress. A strong commitment to an all-embracing program of environmental education will help us to find that new working definition of progress that is a pre-requisite to the continued presence of life on this planet.

- Senator Gaylord Nelson

PREFACE

Teach environmental education???

If I only knew how...
If I only had time...

Is this your dilemma...

No time to research...
No time to plan...
No materials...

This guide to environmental education, written by teachers, for teachers, with your students in mind, is the answer to your dilemma.

Each lesson, complete with behavioral objectives, procedures for student centered activities both in and out of the classroom and supplementary materials, utilizes an integrated approach.

Teach environmental education???

Of course you can!!!

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Peggy Wolfgram, Pulaski

DIRECTIONS FOR USING THIS GUIDE

This guide contains a series of episodes (mini-lesson plans), each containing a number of suggested in and out of class learning activities. The episodes are built around 12 major environmental concepts that form a framework for each grade or subject area, as well as for the entire K-12 program. Further, each episode offers subject area integration, multi-disciplinary activities, where applicable, both cognitive and affective behavioral objectives and suggested reference and resource materials useful to the teacher and students.

1. This I-C-E guide is supplementary in design--it is not a complete course of study, nor is its arrangement sequential. You can teach environmentally within the context of your course of study or units by integrating the many ideas and activities suggested.

2. The suggested learning activities are departures from regular text or curriculum programs, while providing for skill development.

3. You decide when any concepts, objectives, activities and resources can conveniently be included in your unit.

4. All episodes can be adapted, modified, or expanded thereby providing great flexibility for any teaching situation.

5. While each grade level or subject area has its own topic or unit emphasis, inter-grade coordination or subject area articulation to avoid duplication and overlap is highly recommended for any school or district seeking effective implementation.

This total K-12 environmental education series is the product of 235 classroom teachers from Northeastern Wisconsin. They created, used, revised and edited these guides over a period of four years. To this first step in the 1,000 mile journey of human survival, we invite you to take the second step--by using this guide and by adding your own inspirations along the way.

PROJECT I-C-E TWELVE MAJOR ENVIRONMENTAL CONCEPTS

1. The sun is the basic source of energy on earth. Transformation of sun energy to other energy forms (often begun by plant photosynthesis) provides food, fuel and power for life systems and machines.

2. All living organisms interact among themselves and their environment, forming an intricate unit called an ecosystem.

3. Environmental factors are limiting on the numbers of organisms living within their influence. Thus, each ecosystem has a carrying capacity.

4. An adequate supply of clean water is essential to life.

5. An adequate supply of clean air is essential for life.

6. The distribution of natural resources and the interaction of physical environmental factors greatly affect the quality of life.

7. Factors such as facilitating transportation, economic conditions, population growth and increased leisure time influence changes in land use and population densities.

8. Cultural, economic, social, and political factors determine man's values and attitudes toward his environment.

9. Man has the ability to manage, manipulate and change his environment.

10. Short-term economic gains may produce long-term environmental losses.

11. Individual acts, duplicated or compounded, produce significant environmental alterations over time.

12. Each person must exercise stewardship of the earth for the benefit of mankind.

A "Concept Rationale" booklet and a slide/tape program "Man Needs His Environment" are available from the I-C-E RMC to more fully explain these concepts.

TABLE OF CONTENTS

E. S. E. A. Title III – PROJECT I-C-E 59-70-0135-4

Environmental:

Integrated with:

CONCEPT NO. 1-Energy **SUBJECT** Science

ORIENTATION Sun Energy **TOPIC/UNIT** Sun Energy

BEHAVIORAL OBJECTIVES

Cognitive:

Write an explanation of photosynthesis including the chemical formulae involved in the process.

Affective:

Verbally support the proposition that energy from the sun is converted through photosynthesis into a form all living things can use for life processes.

Skills Used:

1. Experimenting
2. Observing
3. Keeping records
4. Organizing
5. Illustrating

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Starch Test
   1. Place a very small amount of starch in a drop of water on a glass slide and add a drop of dilute iodine solution. What change occurs? Repeat the experiment, using sugar instead of starch. Apply this starch test to note paper, filter paper, cheesecloth, muslin, raw potato, etc.

B. Storage of Starch in Leaves
   1. As noted above, the presence of starch in a leave may be considered good indirect evidence of photosynthesis. Starch may be detected in leaves by the following method. Remove chlorophyll from the leaves by soaking them in hot alcohol. The process is facilitated if the leaves are first briefly immersed in boiling water (tie a long thread to the petioles in order to handle the leaves without risk of burns). When the chlorophyll has been removed, rinse the leaves in cool water to make them pliable. Test for starch by placing the leaves in Petri dishes and adding enough iodine solution.

(continued)

Outside or Community:

A. Visit to local florist. (Plants growing in man-made environment.)
   1. Refer to checklist of Pre and Post Field Trip procedures.
   2. Pupils prepare questions they wish to ask florist, e.g. How does a plant get its food? How does the florist aid the plant to use sun energy?
   3. Pupils record observations on note pads.
   4. Pupils work in groups after field trip pooling their observations. One recorder for each group reports to class.

B. Visit a tree nursery (plants growing in natural environment). Use same procedure as outlined above.

SUGGESTED RESOURCES

Publications:

Books:
Science in Action, Prentice Hall, Englewood Cliffs, N.J.
People and Their Environment, Grades 4-5-6, Unit I, p.5.

Audio–Visual:

Films:
Our Mr. Sun, 20 min., Bell System.
Riddle of Photosynthesis, 12 min., U. S. Atomic Energy Commission.

Community:

Local florist.

CONTINUED OR ADDED LEARNING ACTIVITIES

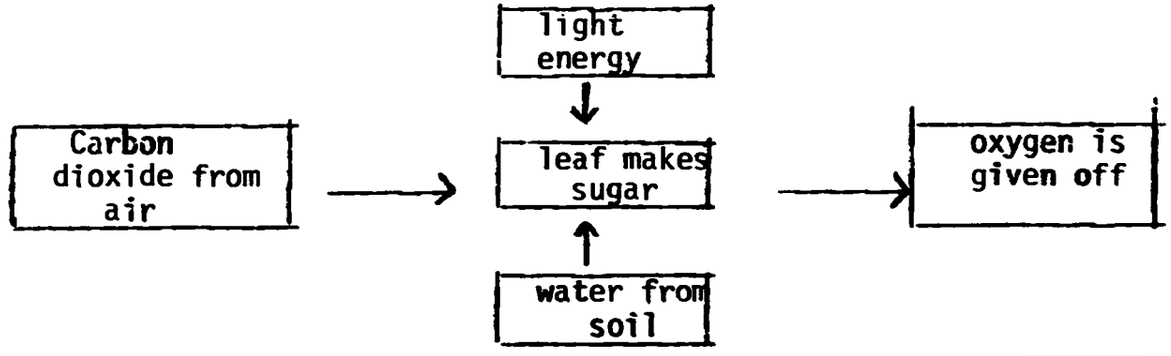
CLASSROOM (Continued)

B. to cover them. What happens if starch is present? Apply this starch test to:
   (1) leaves picked from a plant at sunset; i.e. a plant that has been in full sunlight all day.
   (2) leaves picked from a plant at sunrise; i.e. a plant that has been in darkness overnight.

C. Pin a geranium leaf between 2 flat corks without removing it from the plant. After 24 hours, this leaf and another leaf that had not been pinned are tested with iodine after removing the chlorophyll (explained on first sheet).
Result: The starch test was negative for the part of the experimental leaf from which light was excluded. Conclusion: Light is necessary for photosynthesis in geranium leaves.

Sample-Guided Learning Sheet for Geranium Leaf Test

1. What did you observe when you placed iodine on the two geranium leaves?
2. Why do you think this was the result?
3. Where did the starch from the one leaf come from?
4. Why didn't the other leaf have starch present?
5. Write a simplified chemical equation for the process of photosynthesis.
6. Write a short paragraph explaining how a plant produces starch.
7. Why are green plants so important to animal life? Explain.
8. Draw a diagram of the process of synthesis, e.g.



SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications:	CLASSROOM (Continued) 9. Write equation for photosynthesis (getting acquainted with chemistry). $6\,CO_2 + 6H_2O \xrightarrow{\text{Light energy, Chlorophyll}} C_6H_{12}O_6 + 6O_2\uparrow$ carbon dioxide — sugar — oxygen Note to teacher: This formula can be read, 6 molecules of carbon dioxide plus 6 molecules of water with light energy and chlorophyll give off sugar and 6 molecules of oxygen.
Audio–Visual:	
Community:	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 1-Energy

SUBJECT Mathematics - Science

ORIENTATION Sun's Energy

TOPIC/UNIT Metric Measuring Preferred

BEHAVIORAL OBJECTIVES

Cognitive:

Collect data on amount of plant growth and construct a graph. Make predictions on the growth of a plant for a given period of time that extends beyond the observations made and graphed.

Affective:

Defends putting a plant in the sun over putting plant in area devoid of sunlight when growth is wanted.

Skills Used:

1. Making a line graph
2. Making and reading a meter stick
3. Learning terms lateral, terminal
4. Using metric system

STUDENT–CENTERED LEARNING ACTIVITIES

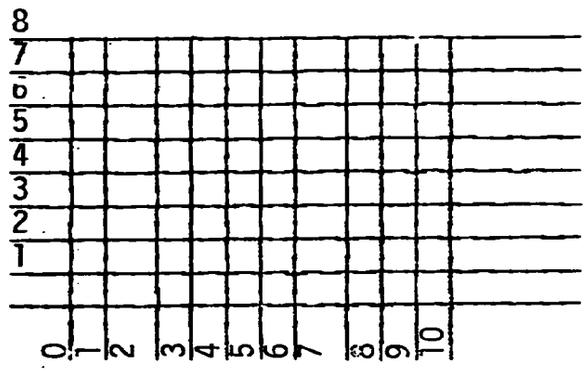
In-Class:

A. Graphing growth of plants.
   1. Plant two vines - grass, radishes, beans, or sunflowers in containers of soil or vermiculite. Place one in sunlight, the other in a place devoid of sunlight.
   2. Place student-made meter stick for measuring purposes into container.
   3. Graph growth on line graph in centimeters, recording date of observations.

B. Make predictions on future growth.

Outside or Community:

Growth of vine in Centimeters



Days on which observations are made.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

Darling, Lois and Louis
Place in the Sun; Ecology
and the Living World, Morrow
1968.

Audio–Visual:

5553 Photosynthesis A 63
22 Minutes ($8.75) BAVI.
6743 Green Plants and Sunlight,
$4.00, BAVI 11 Minutes.

Community:

Farm with particular vine crops.
County Agent
Greenhouse
Gardens

For creative writing lesson on this concept, see page 11, Concept #1, Language Arts, Gr. 5.

Another option would be writing three paragraphs on the graphing exercise, covering their observations, conclusions and predictions of future growth.

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 1-Energy

SUBJECT Language Arts

ORIENTATION Energy

TOPIC/UNIT Creative Writing

BEHAVIORAL OBJECTIVES

Cognitive:

State the important effects of the sun on nature, in a creative writing type format.

Affective:

Defend the fact that things on the earth are dependent upon the sun's energy.

Skills Used:

1. Writing skills:
   - Punctuation
   - Capitalization
   - Etc.
2. Creative imagination

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. View Film, "Our Mr. Sun", "Nature's Half Acre" or "A World is Born"

B. Pupil writing as Mr. Sun: "How do I affect things on earth from sunrise to sunset."
   1. leaf
   2. child
   3. a house
   4. grass
   5. air

C. Pupils working in pairs prepare skits, e.g.
   - Mr. Sun interviewed by a news reporter.
   - Mr. Sun talking to a plant (daisy) an animal (dog) and a boy.
   - Mr. Sun and Mr. Water look back over years and the changes that have taken place and why.
   - Mr. Sun and Mother Earth.
   - Mr. Sun and the Four Seasons.
   - Mr. Shadow and Billy.

D. Read poem "I Have a Little Shadow," by Robert Louis Stevenson.

Outside or Community:

Walk around school yard three different times on a sunny day, early morning, noon, and late afternoon.

Observe:
1. Shadows
2. Plant growth as affected by sunlight
3. Position of sun in sky and path of sun, relate this to design of school building also.

SUGGESTED RESOURCES

Publications:

Films:
Mr. Sun, Bell Telephone, 1 hour.
Nature's Half Acre - Walt Disney Educational Materials Co., 33 min., ICE, RMC.
A World is Born - Walt Disney Educational Materials Co., 20 min., ICE, RMC.

Audio-Visual:

Posters - bright colors.
Appropriate music - suggesting sunrise-sunset.
Music teacher and librarian could offer suggestions.

Community:

Local photographer could talk about the sun - its impact on camera shots, photo-effects, etc.

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM (Continued)

For Science - Math Experience with this concept, see Lesson #1, Sun's Energy, Metric Measuring, Gr. 5.

E. S. E. A. Title III – PROJECT I-C-E 59-70-0135-4

Environmental: **Integrated with:**

CONCEPT NO. 1-Energy **SUBJECT** Mathematics

ORIENTATION Temperature Reading - Sun Energy **TOPIC/UNIT** Graph Reading

BEHAVIORAL OBJECTIVES

Cognitive:

Interpret a chart showing daily growth of plants in centimeters for any given day or height included in the chart.

Affective:

Verbally support the proposition that energy from the sun is converted through photosynthesis into a form all living things can use for life processes.

Skills Used:

1. Reading of graphs
2. Comparing
3. Observing and reporting

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

I. (Worksheet graph on reverse side)
A. Ask children to look at worksheet graph on next page. Explain that someone did an experiment with pea seedlings to find out how much they would grow each day at a certain temperature. Have them look at 55 degrees on the chart. At 55 degrees the seedling grew 1/2 centimeter each day. Explain that seedlings were also growing at other temperatures.
B. Have children graph the information.
C. Have children answer various questions using the graph information.
1. At what temperature did plants grow most?
2. At what temperature did the plants grow least?
3. Which temperature was the most like a cool day? Like a hot day?
4. Which temperature was best for plants?
5. What happened when the temperature was too cold? Too hot?

(Continued)

Outside or Community:

Teacher assigns an over night report consisting of three examples of how people try to control the sun's heat rays and use it to modify temperature.
Examples:
Modern Man:
1. awnings
2. tinting of glass
3. color of clothing
4. seasonal clothing
5. building design
6. heating systems
7. sun glasses
8. venetian blinds
9. closing and opening of drapes
10. suntan lotion

Primitive Man:
1. clothing
2. use of fire
3. shelters used

After reports, teacher could direct discussion toward comparison of modern man's ways and primitive man's ways. "What did primitive man do to achieve some control over temperature?"

SUGGESTED RESOURCES

Publications:

Conditions Affecting Life, Unit 23, ICE, RMC No. 130 Mc.

Audio-Visual:

"Graphs -Understanding and Using Them" $4.00, Coronet 1967, 11 min., BAVI.

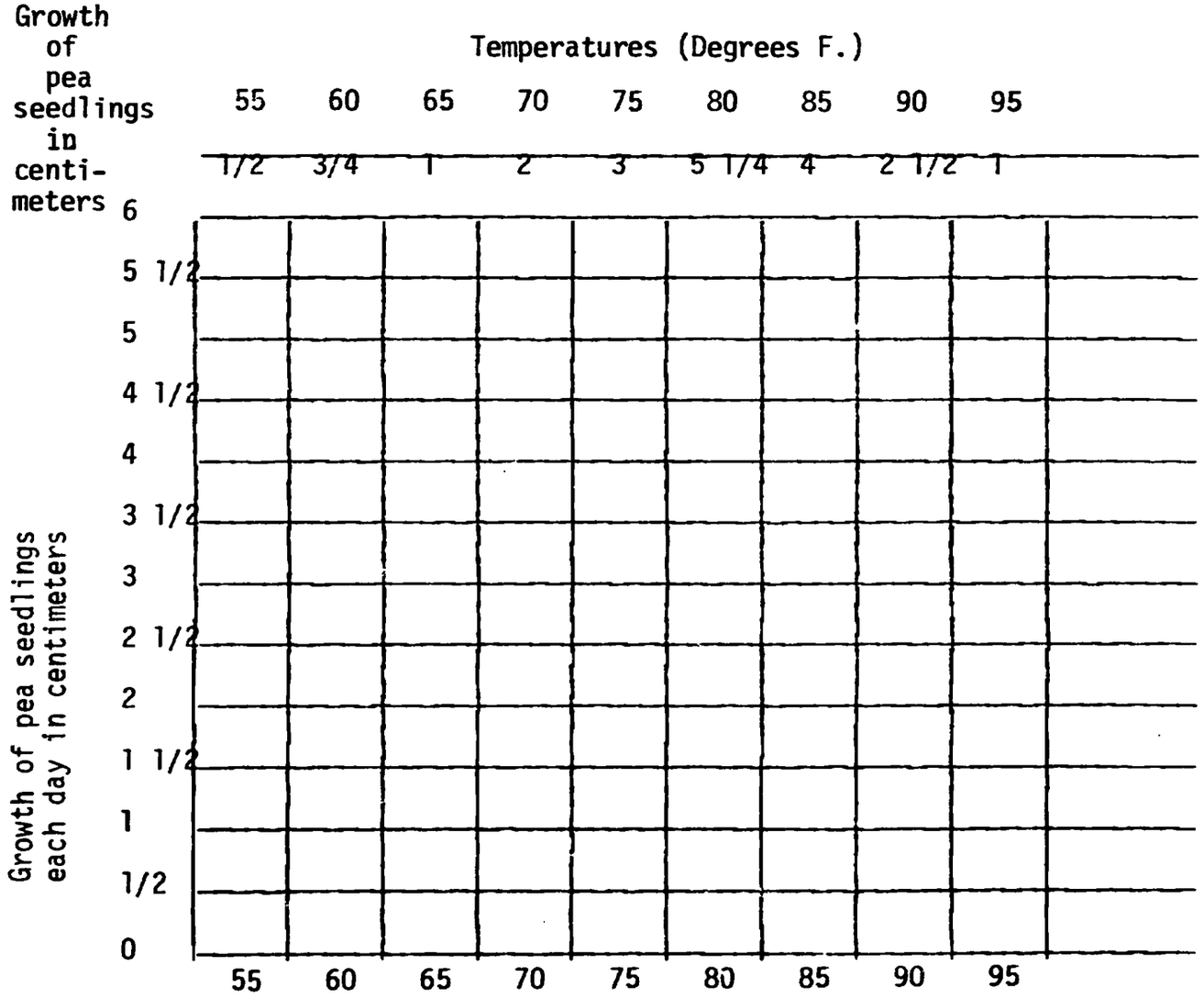
Community:

Greenhouse
Gardens
Farm Areas

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM (Continued)

6. When would you expect pea plants to grow best, in the winter, summer or spring?
7. What crops have you noted being affected by various temperatures?
8. How do the extreme temperatures for growing affect your life?



E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 1-Energy

SUBJECT Physical Education

ORIENTATION Energy Sources

TOPIC/UNIT Tumbling

BEHAVIORAL OBJECTIVES

Cognitive:

After activities 75% of the students will see the indirect dependence on the sun by orally listing an example of a food chain and physically creating one. Analyze a given sequence of plants and animals, said to be a food chain, to determine if they have all the requirements of a food chain.

Affective:

Defend the dependence of all living things on the sun's energy. (Indirect and direct, cause and effect relationships)

Skills Used:

1. Strength, agility coordination of body muscles
2. Cooperation
3. Kinesthetic

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

Note: Following activities are illustrated in Curriculum Manual for Elementary Physical Education, Mel J. Nicks, I-C-E RMC 613 Ni, copyright by Diocesan Dept. of Education, Green Bay, Wis., 1965.

I. Mat Stunts (Individual)
   a. Stump walk
   b. Log Roll
   c. Coffee grinder
II. Mat Stunts (Dual)
   a. Wheelbarrow
   b. Double walk
   c. Churn the butter
   d. Climb around
III. Tumbling (Use mats also)
   a. Side or puppy
   b. Forward roll
   c. One legged feather roll
   d. One arm roll
   e. Skin the snake
   f. Backward roll
IV. Student centered - teacher directed.
   a. Discussion to make the children aware of the food chain they are part of and dependent on.

(Continued)

Outside or Community:

I. Physical Education
   A. Visit a junior or senior high gymnastics class.
      1. Observe and discuss agility and coordination of body movements.
      2. Discuss food necessary for physical fitness and energy.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

Curriculum Manual for Elementary Physical Education, Mel J. Nicks, Diocesan Dept. of Education Green Bay, Wis., 1965 I-C-E RMC

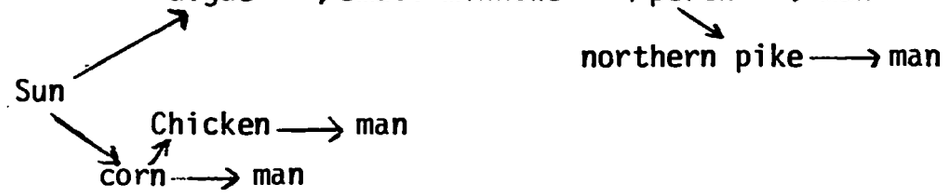
Audio–Visual:

Community:

CLASSROOM (Continued)

IV. b. Example: Simple Food Chain
Sun ⟶ rice ⟶ Chinese
Sun ⟶ corn ⟶ man

c. Complex:



d. Have students choose a link of a food chain performing Skin the Snake, Sun beginning, etc.

V. Pyramid Building
a. Have children build pyramids, with 3 people representing the simplest chain.
b. With 4 people representing the next chain.
c. Continue to the most complex chain of 6 people.

E. S. E. A. Title III — PROJECT I-C-E 59-70-0135-4

Environmental: **Integrated with:**

CONCEPT NO. 1-Energy **SUBJECT** Art

ORIENTATION Sun and its characteristics **TOPIC/UNIT** Painting, Social Studies

BEHAVIORAL OBJECTIVES

Cognitive:

Translate the surface characteristics of the sun into a collage.

Affective:

Demonstrates awareness of surface characteristics of the sun by making a collage or similar object which illustrates these characteristics.

Skills Used:

1. Water color techniques
2. Finger painting techniques
3. Line drawing:
   a. Marker
   b. Pen and ink
4. Awareness
5. Making collages

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

A. Find pictures of the sun. Put on chart or make a collage. Use magazines, newspapers. Discuss the different ways the sun is pictured, the time of day, and the sun's surface characteristics.

B. Do research on ancient civilizations that used the sun as the center of their values such as the Aztecs and the Egyptians. Why was the sun worshipped?

C. Use water colors or finger paints to create swirls which show the powers of the sun or give a gas effect.

Outside or Community:

Integrate with episode in Language Arts in creative writing Concept I.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

"When Paint Is Free," Non-brush painting techniques, B. Wasserman il. Arts and Activities, 65:22-3, Apr. '69.
"Finger Painting Revisited," K. K. Agle, Arts and Activities, p. 27, Dec. '70.
"String Printing on Tissue Collage," J. Prange, Arts and Activities, 68:36-7, Dec. '70.

Audio-Visual:

"A World Is Born" (film) I-C-E RMC.
Bell Telephone Series, "Our Mr. Sun"
"What Is a Painting?"

Community:

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 2-Ecosystem

SUBJECT Mathematics - Science

ORIENTATION Recognizing Shapes Imbalance

TOPIC/UNIT Measuring - Comparing Numbers

BEHAVIORAL OBJECTIVES

Cognitive:

Demonstrate a method for plotting a square foot of school lawn and identifying the natural life contained therein.

Affective:

Demonstrate and appreciate his surroundings and the forms of plant life by stating the importance of plant life.

Skills Used:

1. Measuring
2. Recording
3. Charting
4. Gathering Data
5. Drawing or
6. Sketching
7. Computation
8. Averaging

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. A field trip is planned to the grass-covered vacant lot areas or in a nearby field after a discussion is held in the schoolroom.
   1. Aim of field trip.
   2. How to find what a square foot is and the practical way to keep within that area.
   3. What records will be kept?
   4. Will specimens be preserved? How?
   5. How will plants and insects be identified? What leaf patterns are there?
   6. Which children will form respective groups?

Outside or Community:

A. Take children to grass-covered areas.
B. Measure off square foot of ground - using string for boundary.
C. Have children list the types of:
   1. grass
   2. clover (count and record on a chart)
   3. flowers
   4. fungi
   5. weeds
   6. insect life
D. What is the most common kind of plant found in square foot of plot? (Sketch a leaf of the plant showing actual size, shape, vein, edge patterns.)
E. Sketch organisms and identify.
F. Investigate three ways in which the living organisms on the surface of the ground affect the soil and plants.
G. Compare plots located in different places, shaded areas with sunny, etc. to note differences in growth and varieties of life. Record number of species which have been observed.
H. Note season of year and refer to same area again to compare changes.

(Continued)

SUGGESTED RESOURCES

Publications:

Observing Properties
Minnemast Coordinated
Mathematics - Sciences Series
Unit 8 1967 at I-C-E RMC #110
University of Minnesota
National Science Teachers
Association, How To Read the
Natural Landscape in Forests
and Fields by Mallard C. Davis
at I-C-E RMC
(Teacher References)

Audio-Visual:

7123 "Living Things Depend on
Each Other" (color)
11 minutes EBF 1967,
5677 "Life in a Cubic Foot of
Soil" 11 minutes $4.00
Coronet 1958 BAVI.
"Environmental Action - No
Time to Waste" Simulation game
at I-C-E K 4.

Community:

Agricultural Agent

CONTINUED OR ADDED LEARNING ACTIVITIES

OUTSIDE ACTIVITIES (Continued)

I. Find total number of square feet observed.
J. Compute total number and average of plant species observed.
K. Average number per square foot of playground area.

For vocabulary activity, see Language Arts Lesson for
this concept, #2, Gr. 5, pp. 25 and 26.

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 2-Ecosystem

SUBJECT Science

ORIENTATION Imbalance

TOPIC/UNIT Ecosystems

BEHAVIORAL OBJECTIVES

Cognitive:

Collect at least 10 specimens of aquatic animals. He will then classify each and observe them. He will identify and list, through the use of library resources, each animal's food source.

Affective:

Support the fact that there are interrelationships of living things with each other and with their physical environment with examples.

Skills Used:

1. Classifying
2. Measuring
3. Collecting
4. Observation

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Children will make food chains involving plants and animals other than those found in water.
B. Through research the students will be able to extend food chain to include other animals and plants which may be found in this ecosystem.
C. Tie in with Physical Education Lesson for Concept #1. (Creating a food chain)
D. Let pupils name as many food chains as they can. A suggested list:

nectar-butterfly-dragonfly-green frog
acorn-squirrel-raccoon
human blood-mosquito-dragonfly-catbird
garbage-roach-mice-screech owl
leaf-aphid-ladybug
pollen-horseflies-raccoons
earwig-dragonfly-mockingbird
garbage-fly-spider-wasp
nectar-bee-ants-birds
leaf-cone-headed grasshopper-cricket-grack
oak leaf-caterpillar-beetle-woodpecker
sprouts-rabbit
wild fruit-cardinal

(Continued)

Outside or Community:

A. A collecting trip for the entire class.
   1. Organize children into groups.
   2. One teacher use groups of two, each of which has its own strainer, pan, and collecting jars.
   3. Put each kind of animal (aquatic) in a separate jar. Look for:
      (a) Young dragonflies (numph)
      (b) Water boatmen
      (c) Back swimmers
      (d) Water striders
      (e) Adult diving beetles
      (f) Bigs
      (g) The cases of Caddis fly larvae
      (h) Pond snails
      (i) Tadpoles
      (j) Salamanders
      (k) Mites and leeches

SUGGESTED RESOURCES

Publications:

Text:
Exploring Science Series Grade 5, Allyn & Bacon, 1964.
Books:
Adventures with Insects, Richard Headstrom, Lippincott, 1963.
Beginner's Guide to Fresh Water Life, Leon A. Hausman, Putman, 1950.
Field Book of Ponds & Streams, Ann Morgan, Putnam, 1950.

Audio-Visual:

Films:
Chain of Life, 11 min. sound, color, Pictura Films, 1953.
Life in a Pond (Discovery Series-II)NET, 1956.
Materials:
- Kitchen strainers
- Glass jars with screw tops
- Pans - aquarium
- Hand lens
- Drinking glass
- Needle
- Bowl
- Cloth or netting (Continued)

Community:

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM (Continued)

Divide class into small groups. Make food chain charts or bulletin boards using pictures, symbols, words or objects.

AUDIO-VISUAL: (Continued)

String
Microscope
Alcohol
Small bottles with caps

Films:
One Day at Teton Marsh, Walt Disney Educational Materials Co. 48 minutes, I-C-E RMC.
A Slice of Bread, Sterling Educational Films, 16 MINUTES, I-C-E, RMC.
Filmstrips: I-C-E, RMC
Ecological Imbalance: Six Systems Dispoiled (6 filmstrips) FS ST 2
1. Upland Forest
2. Lowland Forest
3. Marshes
4. Grasslands
5. Streams
6. Seashore

Urban Ecology: Six Microsystems FS St3 I-C-E, RMC (6 filmstrips) Illustrate food chains, how ecosystems are maintained and evolve.
1. A paved school yard
2. A vacant lot
3. A pocket park
4. A park pond
5. A grass school yard
6. A construction site

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 2 - Ecosystem

SUBJECT Social Studies

ORIENTATION Imbalance

TOPIC/UNIT Interdependence

BEHAVIORAL OBJECTIVES

Cognitive:

Predict from a given list , the kinds of organisms that live in a specified environment given physical characteristics of an ecosystem.

Affective:

Investigate the value of living organisms in relation to their ecosystem on his own.

Skills Used:

1. Reporting orally
2. Comparative discussion
3. Predicting
4. Research skills

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. On a map of U. S. or Wisconsin, shade in the area of the coniferous and deciduous forest.
B. Research characteristics of each forest type.
   1. Physical environment
      (a) Climate
      (b) Kind of soil
      (c) Topography
   2. Animals
      (a) Kinds
      (b) Characteristics
      (c) How suitable to their environment.
   3. Plants
      (a) Kinds
      (b) Why they grow best here.
C. Discuss ecosystem in light of reports of forest types above.
D. What happens if one element is removed?
E. Given the physical characteristics of an ecosystem, the student will predict from a given list, the kinds of organisms that live there.

(Continued)

Outside or Community:

A. Examine 1 sq. ft. of land on the school yard and describe the physical characteristics of its ecosystem.
B. See Concept #2 Math-Science Lesson for measuring, comparing number recognizing shapes in Ecosystems Gr. 5.
C. Visit typical deciduous and coniferous forest.
D. Have a forest manager of different forest type visit classroom.
E. Have forest manager of local paper mills visit to tell implication of forest types to paper production.

SUGGESTED RESOURCES

Publications:

Encyclopedia
Interaction of Man and the Biosphere, Rand McNally, C. '70 p. 182.

Audio-Visual:

Library
United States Map
Filmstrips:
Communities of Living Things, FS St 6 I-C-E, RMC
(6 filmstrips)

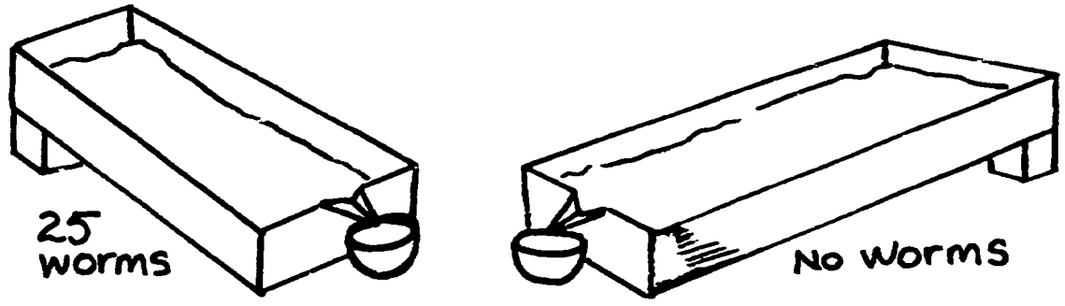
Community:

School yard
Marsh
Vacant lot
Woods

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM: (Continued)

F. Demonstrate the effect earthworms have on the development of soil.
   1. Collect materials:
      a. two wooden boxes 12"x6"x18", with small spout
      b. enough top soil to fill the two boxes equally
      c. package of vegetable dye
      d. 25 earthworms
      e. two quart jars
   2. Place earthworms in one box. The other will have no earthworms.
   3. After a month, continue experiment (No. 4) (If, during the month, moisture is needed for box containing earthworms, the same amount of water must be added to other box. If coffee grounds are added to earthworm box, then same amount must be added to other box.)
   4. Pour an amount of water colored with harmless dye into box of soil containing earthworms. Pour same amount of water and dye into other box. Which soil let more water seep into it? (Boxes are tilted. See diagram.)



(Continued)

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications:	CLASSROOM: (Continued) F. 5. Concepts to be developed by questioning: a. Water flows through earthworm tunnels. b. Plants would grow better and be nourished better in the earthworm box. c. Worms are important for building up the soil. d. The presence of animals in soil indicate fertility. e. Earthworms come to surface after a severe rainstorm because their tunnels have filled with water.
Audio—Visual:	
Community:	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 2 - Ecosystem

SUBJECT Language Arts

ORIENTATION Imbalance

TOPIC/UNIT Ecological Vocabulary

BEHAVIORAL OBJECTIVES

Cognitive:

Match ecological terms listed on page 30 with their definitions or descriptions with 90% accuracy.

Affective:

Suggests ecological words and their meanings in appropriate places in a conversation.

Skills Used:

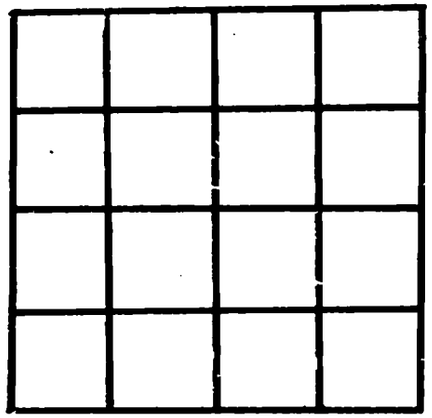
1. Environmental words and their meanings.
2. Using these words.

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Ecology Word Study List
   1. Teacher and students draw up a list of ecological words, (ex. on page 30).
   2. Together teacher and students look up definitions of words and discuss how they are used. If not completed in class, students will finish on their own.
   3. Review all words and their definitions. Teacher gives matching test.

B. Play Bingo Game using ecology words. Pupils choose 16 words, one for each square and they print them on cards divided into 16 squares. Teacher reads definitions and pupils cover words on their cards. The winner of the first game replaces the teacher as "caller."



Outside or Community:

Ecology Words in the Community

1. List 10 ecology words that relate to your home environment. Explain.
2. Take one issue of the local newspaper and underline ecological terms.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

Audio–Visual:

Non-verbal activities to reinforce abstractions - posters, collage, pantomime, skits, dance.
Oral synonyms game.
Illustrative:
Free educational materials from:
Local businesses
travel agencies
DNR
State Historical Society
National Wildlife Federation

Community:

CLASSROOM: (Continued)

C. Make an ecological dictionary of 10 words. Write words and definitions. Illustrate if possible. Make an attractive cover.
D. Write a story about the environment on first and second grade level. Print words. Illustrate pages. Make a colorful cover and title page.
Place in library (if permitted) to be checked out by first and second graders. (Louie the Litterer, Maxine from Mars)

POSSIBLE WORDS:

1. Environment
2. Survival
3. Ecology
4. Energy
5. Population
6. Culture
7. Value
8. Economic
9. Stewardship
10. Inherit
11. Deterioration
12. Interdependent
13. Interaction
14. Limitless
15. Distribute
16. Photosynthesis
17. Capacity
18. Manipulate
19. Violate
20. Erosion
21. Pollution
22. Pesticide
23. Odor
24. Exhaust
25. Sewage
26. Radiation
27. Incinerate
28. Silt
29. Drainage
30. Litter
31. Beautify
32. Detergent
33. Decay
34. Bacteria
35. Aroma

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 2 - Ecosystem

SUBJECT Art

ORIENTATION Colors of Nature

TOPIC/UNIT Diorama Construction

BEHAVIORAL OBJECTIVES

Cognitive:

Construct a zoo display of their own which incorporates the life styles of given animals, based on the research in library books or visit to the Milwaukee zoo.

Affective:

Advocate the presentation of the natural world surroundings of given animals. Demonstrate awareness to the needs of various animals providing proper care for given school animals.

Skills Used:

1. Construction skills:
2. Use of such items as
   -clay
   -cardboard, exacto knives or scissors

(Continued)

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

I. Art

A. Creation of a zoo or nature center using miscellaneous materials for construction.
   1. Students work in groups, each group being responsible for constructing an environment which will comfortably sustain the life of the animal they choose to build an environment for.
   2. All cages must have feeding and watering areas, be safe in that the animals can't escape, yet provide the animal or group of animals with a comfortable living space--flight areas for birds, burrows for burrowing types, sufficient walking areas for large animals, ponds for waterfowl, etc. (It is surprising how interested the students become in providing the best possible life for their caged animal.

Outside or Community:

A. Research library books and magazines noting animals and plants in their natural environments.
B. Trip to Milwaukee Zoo, Wildlife Sanctuary or Reforestration Camp.
C. Trip to a Nature Center.

SUGGESTED RESOURCES

Publications:

"Balance on a Shoestring", O. C. Lacke, Arts and Activities, p. 14-16, June '70.
"Skylight Mobiles", W. D. Ehlers, Arts and Activities, p. 20-1, Jan. '71.
"Papercrafts & Mobiles", R. Perlmutter, Teaching Exceptional Children, pp. 134-41, Spring '72.
"Why Don't You Make a Mobile?" M. Shaw, Arts and Activities, pp. 32-3, April '72.

Audio--Visual:

Books and slides on work of Alexander Calder.

Community:

CONTINUED OR ADDED LEARNING ACTIVITIES

SKILLS TO BE LEARNED: (Continued)

2. -paint and craypas for decorating cages
   -incorporating "junk" items such as pie plates for water holes, meat skewers or pipe cleaners for cage bars, twigs for trees, etc.
3. Learning cooperation in group projects.
4. Properly shaping and forming animals of various sizes and kinds.

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO. 3- Carrying Capacity SUBJECT Social Studies, Language Arts

ORIENTATION Carrying Capacity TOPIC/UNIT Industrial Growth - Interviewing/Reporting

BEHAVIORAL OBJECTIVES

Cognitive:

List local industries and summarize the factors which limit the number of employees for each.

Affective:

Suggest the importance of carrying capacity on his community, which is based on observations of the employees required by the local industries.

Skills Used:

1. Organizing information
2. Interviewing
3. Asking and answering precise questions
4. Develop a form for interviewing

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Designate and locate industries found in community on a map of the city.

B. Divide class into groups and have them choose the industry which they would like to research by interview, using the following forms:

Interviewer_____
Person interviewed_____
Date_____

(1) How many people are employed in your firm?_____

(2) How many people have you hired this past year?_____

(3) Do you plan to hire more next year?_____

(4) How do you figure out how many people you need?_____

(5) For what reasons do you hire new people?_____

(6) For what reasons do you lay people off?_____

(7) Does supply of natural resources affect the number of people you hire?_____

(Continued)

Outside or Community:

Parents as Resource People

Send home letters to parents stating these concepts:

Dear Parents,

We teachers sometimes forget a very valuable resource in the education of your child--you. Would you consider visiting our classroom and explaining your occupation or hobby to the students?

Please fill out the following form and send it back to school with your child.

_____

A time is scheduled for each interested parent. Often a telephone call between teacher and parent clarifies any question a parent might have.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: Ecology of Population, Mac Millan Company	CLASSROOM (Continued) Summarize factors which limit number of employees verbally, graphically, in writing, or combination of these methods.
Audio–Visual: Man and His Environment, a classroom ecology kit. Coca-Cola distributor.	
Community:	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO. 3 - Carrying Capacity **SUBJECT** Social Studies

ORIENTATION Carrying Capacity **TOPIC/UNIT** Map Reading

BEHAVIORAL OBJECTIVES

Cognitive:

Construct a cross-section map. State five relationships of carrying capacity to the environmental factors of the South Central states.

Affective:

Accept the issue that cotton was able to support the employment of many people. Accept the fact that over-use of the resources of an area will result in lowered production and eventual unemployment in that area.

Skills Used:

1. Read and construct cross-section maps.
2. Construct "then and now" maps

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Construct bulletin board of changes of land (original, cotton, slave-labor, over-cropped, conservation practices, machinery).
B. Discuss how to read cross-section maps.
C. Construct cross-section maps.
D. Construct then and now maps of land use (agricultural).
E. Report about people who helped solve the problem.

Outside or Community:

A. County Agent lead a tour of county showing good and bad practices.
B. Obtain soil profile maps from county agent.
C. Take soil samples measuring for top soil (roadside ditches).
D. Child should observe and tell of examples he sees.
E. Find a book of a family or child who lived through this type of experience. (Box Car Family)
F. Check filmstrip or transparency file at the library for materials applicable.
G. Locate maps and pictures related to South Central states.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: Books: Exploring Regions of the Western Hemisphere, Follett, pp. 233-62. The Social Studies and Our Country, Laidlow, p. 283. In These United States and Canada, Heath, p. 311. **Audio—Visual:** **Community:** County Agent Interview parents and relatives, if appropriate.	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 3 - Carrying Capacity **SUBJECT** Social Studies

ORIENTATION Carry Capacity **TOPIC/UNIT** U. S. History

BEHAVIORAL OBJECTIVES

Cognitive:

Locate three settlements on a highway map and state 3 reasons why the people settled there.

Affective:

Organize material which will describe the factors that influence the carrying capacity of an area.

Skills Used:

1. Charting information
2. Relating surface features to historic development
3. Learning to visualize historic events

(Continued)

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Make a chart giving names of the settlements, their national origin and reason why they were founded.
   1. Select an early settlement. Research to find why the people chose that particular place in which to settle. What environmental factors were present that encouraged settlement in this area?
   2. Locate the settlements on a map. Notice their geographic location and discuss ways in which geographic elements affected their origin.

B. Collect pictures to show how people earned a living in the early settlements.

C. Tie in with Art Lesson for Concept #7. (Building and designing futuristic homes)

D. What factors limited settlement in this area?

Outside or Community:

A. Visit a museum and note tools and utensils used in pioneer times.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

Books:
Colonial America by Fisher & Fowler, Grand Rapids, Fideler, 1960.
Coming of the Pilgrims by Smith and Meredith, Boston: Little, Brown, 1964.
This Is Our Land, Franklin Patterson. Syracuse: Singer, 1963.

Audio—Visual:

Community:

Museum

SKILLS TO BE LEARNED: (Continued)

4. Using pictorial material to present information
5. Library research

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 3 - Carrying Capacity

SUBJECT Social Studies

ORIENTATION Carry Capacity

TOPIC/UNIT City Planning and Land Use

BEHAVIORAL OBJECTIVES

Cognitive:

Demonstrate importance of carrying capacity from several viewpoints on a given environment through an in-class debate.

Affective:

Attempt to argue the positive relationship between carrying capacity and the immediate environment.

Skills Used:

1. Debating
2. Critical thinking
3. Analyzing

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Play the game, "Make Your Own World." (Rules and directions come with the game.)
B. Simulation Game #4 I-C-E office.

Outside or Community:

Field trip through town pointing out the same problems as presented in the game.

(a) Air pollution
(b) Water pollution
(c) Sewage plant
(d) City dump
(e) Marina
(f) Racing facilities

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications:	
Audio–Visual: Man In His Environment, a classroom ecology kit. Coca-Cola distributor.	
Community: Chamber of Commerce Local Department of Natural Resources Sewage Plant	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 3 - Carrying Capacity

SUBJECT Language Arts

ORIENTATION Carry Capacity

TOPIC/UNIT Log Writing and Reporting

BEHAVIORAL OBJECTIVES

Cognitive:

Demonstrate a procedure for determining that a sufficient supply of oxygen is necessary for fish to survive. Demonstrate ability to keep a daily log of animal response to a given environmental change over a period of time.

Affective:

Support the fact that oxygen is a necessity for life in water and that there is a limit to number of fish per square inch of water, which is mostly regulated by the oxygen amount available.

Skills Used:

1. Notetaking
2. Observing
3. Setting up physical apparatus
4. Evaluating data

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Read about how to keep (gold) fish in school - upkeep, food.

B. Stock a fishbowl with one or two fish: then add one more at a time (several days apart) until it is noticeable that the fish are searching for oxygen by their continued rising to the top.
   1. Keep a daily account (on critical days perhaps an hourly log) on reaction of fish, if notices of lack of oxygen are evident.
   2. This activity suggested for an individual or small group.

Outside or Community:

DNR Fish Manager for your district can describe how he manages for fish population.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: Fish-Keeping Book **Audio–Visual:** **Community:** Visits by: Pet Show owner Fish hatchery representative Biology teacher	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO. 3 - Carrying Capacity **SUBJECT** Mathematics

ORIENTATION Over-Population **TOPIC/UNIT** Rates - Graphing

BEHAVIORAL OBJECTIVES

Cognitive:

Use rate pairs to estimate and graph the population change of fruit flies.

Affective:

Test the factors that determine carrying capacity to determine the importance of each factor.

Skills Used:

1. Graphing
2. Making and interpreting
3. Data tables
4. Rates

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Prepare a container (Use a plastic gallon jar; put 1/4 inch holes in the lid, fill the holes with cotton so air can enter. Peel a banana so 1/2 of the pulp is exposed and put into the container)
1. To collect the flies, leave the lid off until the flies begin to come.
2. When a sufficient amount have arrived, replace the cover, record the number of flies and the date.
3. After 10 days record the number of flies and the date. Put this information onto a data chart.
4. Set up a rate second gen./ initial using this rate, calculate the estimated growh if it continues at this rate for two more weeks; four more weeks. Put this estimated growth onto the graph.
5. Two weeks after your second generation, count and record your population increase or decrease. Graph.

How does it correlate with

(Continued)

Outside or Community:

A. The county agent can speak on the increase of population of various insects.

B. Propose a hypothetical situation to the pupils. We have one acre of land. What environmental forces will affect the land's capability to produce food? (amount of rain, type of soil, amount of sun, climate, wind, etc)
Given the same acre of land, if the population doubles what can the people do to make sure that no one starves?
Divide students into groups. Appoint a secretary to record results and a chairman to conduct discussion and let all members have a chance to talk. After 20 minutes, the secretary of each group can report the results to the class. Some results could be:
People could eat less.
People could become vegetarians.
They could move away.
They could try ways of making the land produce more.
They could educate people through Peace Corps, Missionaries, more schooling.
Birth control methods.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

Populations SCIS Text - at I-C-E 100 Co Boughey, Arthur. Ecology of Population, MacMillan Company.

Audio—Visual:

"Flies and Mosquitoes - Their Life Cycle and Control" BAVI.
Films:
Family Planning, Film 230, Walt Disney Educational Materials Co., 10 minutes, I-C-E RMC.
Boomsville, Film 400, Learning Corporation of America 10 minutes, I-C-E RMC.

Community:

County Agent
Exterminator

CLASSROOM (Continued)

A. 5. your estimate? Why is there a difference?
   6. What about the food supply? Should you add more? Does that change the carrying capacity?
B. If students are interested, you may introduce other variations - size of environment (baby food jars, cottage cheese box, etc.) food supply. The student can use rates and estimate and graph growth.

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: | **Integrated with:** Art

CONCEPT NO. 3 - Carrying Capacity | **SUBJECT** Art

ORIENTATION Over-Population | **TOPIC/UNIT** Art History

BEHAVIORAL OBJECTIVES

Cognitive:

Define over-population in terms of objects per space available. Illustrate the way that increased population affects the space available to each individual.

Affective:

Perceives over-population as a result of increasing the number of people or animals within a given area of land.

Skills Used:

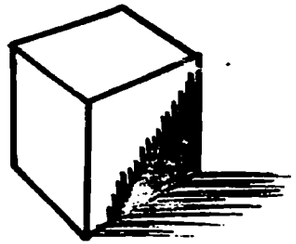
1. Shading techniques
2. Appreciation
   a. Art History
3. Awareness

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

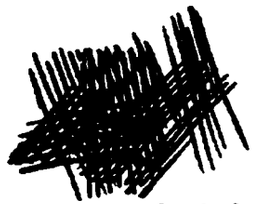
I. Art

A. Introduce shading.
   1. Relate to our environment as shading being over-population of lines.
   2. In a picture an artist shades an area by using many lines.



   3. Study A. Durer's and Rembrandt's etchings showing hatching and cross-hatching.

Hatching



Cross Hatching

Outside or Community:

I. Art

A. Look at population maps with population.
B. Observe the various "shaded" areas of the United States.
C. Library research of shading techniques.
D. Have art teacher demonstrate shading techniques.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: Commercial Art Techniques, Maurello, S. Ralph 3rd Ed. Viking Press, New York, 1970. "Light and Dark" F.A. Fine Arts Publications Project I-C-E RMC. **Audio-Visual:** **Community:**	BEST COPY AVAILABLE

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 4 - Water

SUBJECT Language Arts, Social Studies, Science

ORIENTATION Water Pollution

TOPIC/UNIT Water Pollution Purification - European Explorers - Letter Writing

BEHAVIORAL OBJECTIVES

Cognitive:

Demonstrate two ways to purify water.

Affective:

Support a concern for conservation of natural water supply with verbal statements.

Skills Used:

1. Letter writing
2. Map skills
3. Laboratory skills
4. Research - Use of IMC

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. The student will investigate, through research, several methods of purifying water.

B. The student will use two of the methods to purify a sample of water.
   (a) Distillation method
   (b) Iodine method
   (c) Chlorine bleach method
   (d) Boiling and filtering
   (e) Purification tablets
   (f) Others.

C. Find on map cities that are located near bodies of water. Note their populations. Find cities not located near water. Note their populations. Compare:
   Why did people settle near bodies of water? (transportation, water supply, economic reasons, etc.)
   Why have so many bodies of water become polluted in the 20th century? (increased population, industrial wastes, insecticides, more water usage per capita, etc.)

Outside or Community:

A. Library research:
   1. Who was Ponce de Leon?
   2. Trace his route of exploration.
   3. What was he looking for? Why?
   4. Where did he find it?
   5. What was it supposed to do?

B. Write to St. Augustine, Florida Chamber of Commerce for present-day information on the preservation of this spring.

C. Visit local water department to see how water is "purified" for city use.

Integrate with episode in Art with painting in water supply - Concept #5

SUGGESTED RESOURCES

Publications:

Silver Burdett Company,
"The Changing World" 1970 pp. 34-35.
Ginn & Company
"The United States and Canada"
1961, pp. 188-189.
Heath - "In These United States
and Canada" 1969, p. 205.

Audio-Visual:

Filmstrips:
Environmental Pollution. .Our World
in Crises, FS, St 1, No. 4 and No. 5,
I-C-E RMC.
Filmstrip: Ponce de Leon
Marinette Co. Bookmobile.
Films:
The Stream, Film 320,
ACI Films, Inc. 15 minutes,
I-C-E RMC.
Rise and Fall of the Great Lakes
Film 240, National Film Board of
Canada, I-C-E RMC.

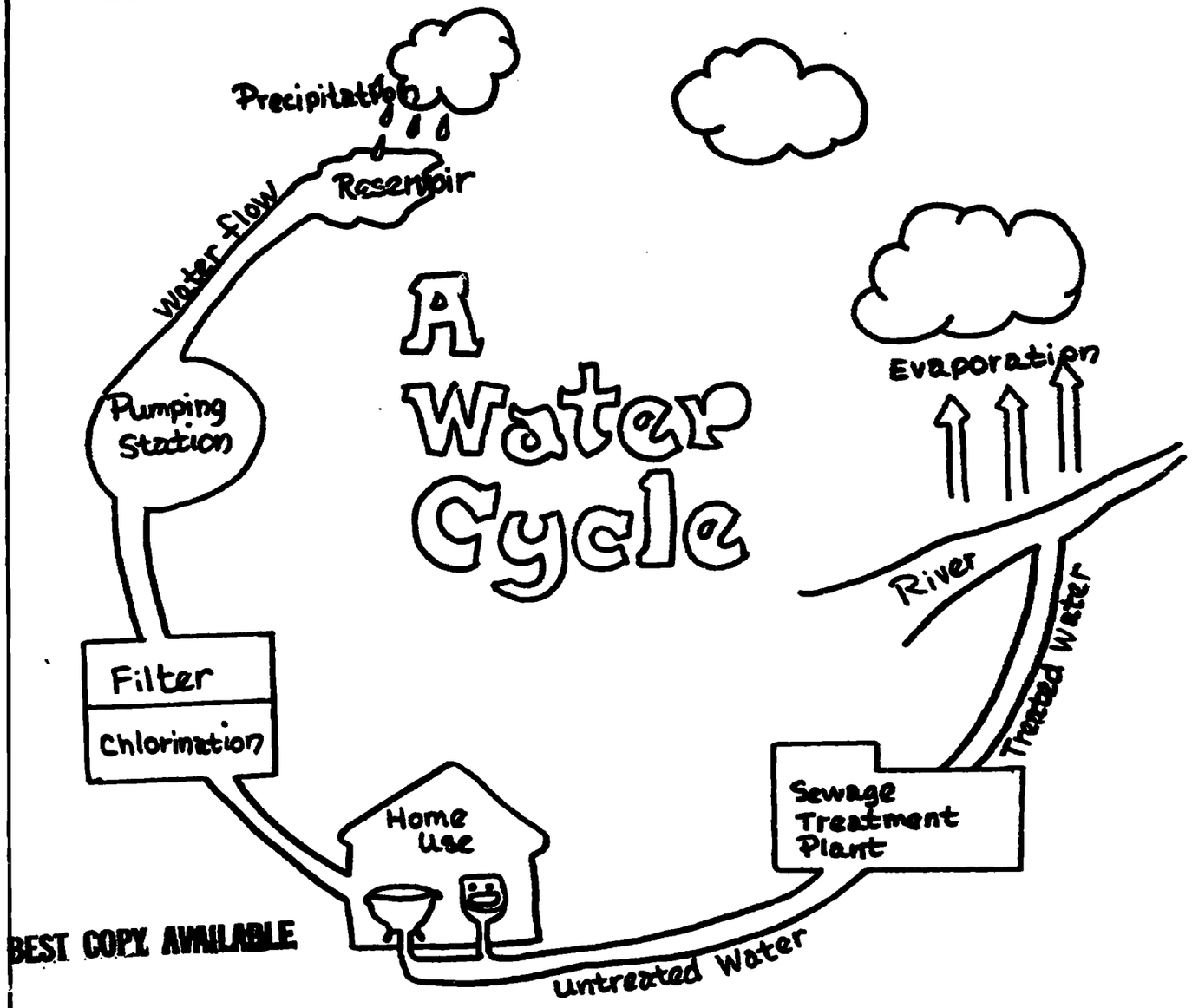
Community:

Local Water Department

Educational Resources
Brochures - Community resource
people from water department.
Visit local water plant.

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM: (Continued)
D. A Water Cycle



(Continued)

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications:	CLASSROOM: (Continued) D. 1. Distribute above diagram. 2. Discuss each step. E. List uses of water. Find news clippings, magazine articles, pamphlets and books on water uses. Lead discussion on to how school uses water and lead to water supply of the community - wells? Lake Michigan?
Audio—Visual:	
Community:	

E. S. E. A. Title III – PROJECT I-C-E 59-70-0135-4

Environmental:

Integrated with:

CONCEPT NO. 4 - Water

SUBJECT Science

ORIENTATION Water Pollution

TOPIC/UNIT Water

BEHAVIORAL OBJECTIVES

Cognitive:

Describe ways man pollutes his water supply . Explain the effects of pollution on living organisms in a discussion.

Affective:

Support the need for treating community drinking water supplies with chemicals that will destroy harmful organisms or test the purity periodically to assure drinkable water that is not harmful to the individuals.

Skills Used:

1. Observation
2. Show and Tell Skill
3. Writing skill

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

A. Bring to class two pure containers of water. One should contain drinkable water in which you have placed a gold fish, tadpole, or some other creature which survives in water; the other should contain water in which bleach or other chemical which will kill the fish once he is placed in it (but will not change the appearance of the water).

Questions:

1. What do I have here?
2. Does it matter from which container I drink? Why?
3. Who would like to conduct an experiment? Have a student volunteer to transfer the fish from one container to the next. As soon as the fish is placed in the water, it will begin to struggle and die. They may want to take him out, but this will also get the point across.

(Continued)

Outside or Community:

SUGGESTED RESOURCES

Publications:

"Be a Pollution Detective"
U. S. Dept. of H. E. W.
"The Sickening Story of Water Pollution vs. Dept. of H. E. W."
U. S. Dept. of H.E.W.
"What's Happening to our Waters?"
U. S. Dept. of H.E.W.
"America's Shame--Water Pollution"
U. S. Dept. of H.E.W.

Audio-Visual:

Community:

Gar Jolin
Wildlife Game Management
Bill Harper
Lena Head of Environmental Action Group
Local people of the same capacity

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM (Continued)

Then Ask:
1. What caused the goldfish to die?
2. Who would like to have a drink of this water now?
3. Do we put things that are harmful in our water? How?
4. What happens when the toilet is flushed?
5. What happens to the waste from industry?

Environmental: **Integrated with:**

CONCEPT NO. 4 - Water **SUBJECT** Science

ORIENTATION Water Pollution **TOPIC/UNIT** Water Pollution

BEHAVIORAL OBJECTIVES

Cognitive:

Describe types of impurities left after evaporation of water samples collected from at least three sources in terms of

a. plant characteristics
b. animal characteristics
c. chemical solution characteristics

Affective:

Suggest that water pollution is sometimes responsible for the shortage of our water resources which supplies needs for food, recreation and life.

Skills Used:

1. Measuring
2. Collecting
3. Observing

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

1. Where did you find samples?
2. What do you see?
3. How do you think impurities got there?
4. Would this be harmful to you?

Outside or Community:

A. Have students collect in a jar some water from different places in your community (streams, ponds, puddles and gutters); shake up the samples and place a tsp. of each in a separate dish. Let the samples evaporate. Then look at the dishes.

See questions under Classroom Activity.

B. Ask the Fish and Game Warden to speak to the class on the need for pure water for living organisms.
C. Ask fathers and neighbors who work in industry to speak to the class on what the company is doing to cut down on pollution.
D. Ask Sanitary Water Engineer to explain how water is purified for human consumption.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: Teacher's Curriculum Guide to Conservation Education, Nat'l Wildlife, Feb.-Mar. 1971, pp. 26-28, 43-46. **Audio-Visual:** Wise Use of Water Resources (color), 14 minutes, V.W.F. **Community:** Local streams, lakes, ponds, rivers, etc. Lena Environmental Group (will send speakers to school)	QUESTIONS FOR DISCUSSION 1. Is their drinking water safe? 2. Why do you think so? 3. Has it been used before? 4. What has happened to make it safe? 5. Why is some water not fit to use? 6. What do we mean by "polluted" water? Tie this lesson with Art lesson for Concept #4. (Monochromatic painting)

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO. 4 - Water **SUBJECT** Mathematics

ORIENTATION Water Conservation **TOPIC/UNIT** Large numbers - Measuring - Graphs

BEHAVIORAL OBJECTIVES

Cognitive:

Compute daily amounts of water used in their homes, community, and local industries from information collected from each source.

Affective:

From studying statistics and solving problems, make at least one change in his home on conserving water after studying statistics gathered on how water is currently being used.

Skills Used:

1. Large numbers
2. Problem solving
3. Graphs
4. Measuring

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. In small groups work together on these problems:

1. If the average American uses 60 gallons of water a day, how many gallons is this per week?
2. If the community must produce 150 gallons per person per day, how much is this in your community per day? Per week? Month? Year?
3. Measure how much is needed for a shower.
4. The paper industry uses 90,000 gallons of water for one ton of paperboard.
5. How many gallons are needed for one pound of paper?
6. For 53,000,000 tons per year, how many gallons of water are used?

Outside or Community:

A. As a home experiment in saving water, try the experiment from publication Pollution, p. 34. (See next page.)

B. List the various uses of water in your home. Select one way in which the members of your family can conserve water, and after two weeks report to the class.

C. Draw a poster or cartoon on water conservation. (Post in school corridor.)

D. Collect magazines or newspaper articles which include statistics on use of water in homes and industry.

E. Find the water meter in your home with the help of your mother or father. Learn how to read it. Copy it on paper and bring to class.
It would be interesting to compare a water bill from this year with one from last year. Are we using more water? Why? List 10 things we can do to cut down on the use of water.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

J. K. Couchman, D. F. Wentworth, J. C. MacBean, A. Stecher, Pollution, Holt, Rinehart & Winston, 1971, pp. 67-68 , I-C-E RMC.

Audio—Visual:

"Water Famine" (54 minutes), Carousel Films, Inc. Broadway New York, New York 10035.
"Problems with Water is People" (30 minutes), color on request. McGraw Hill Contemporary Films 330 W. 42nd Street New York, New York 10018.

Community:

Sources of water supply
1. City
2. Village
3. County

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 4 - Water

SUBJECT Art, Language

ORIENTATION Water

TOPIC/UNIT Theme Writing - Illustrations

BEHAVIORAL OBJECTIVES

Cognitive:

Write his feelings about Mr. Water in each of its different forms, using the first person format, while participating in a group of 2 or 3 students.

Affective:

Support the statement that water in its many different forms is essential for life with examples given verbally.

Skills Used:

1. First-person creative writing
2. Research

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Class discusses water cycle (view film if handy). There is practically the same amount of water on the earth now as there was thousands of years ago.
B. Talk about different forms of Mr. Water...i.e., clouds, fog, dew, snow, rain, hail, ice, aquifier, sleet, water vapor, icicle, steam, mist.
C. Class groups of 2 or 3 choose a water form and research their form of Mr. Water and write in first-person, their feelings of Mr. Water. "I am Mr. Water."

SUGGESTIONS:
Make illustrations to accompany their story and display them.

Make up riddles with words from number II above or give clues, one at a time, until the form of water is identified.

Outside or Community:

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

Busy Water, Irma Simonton Black, E 551.4 (water cycle described) B 56.
Wonders of Snow and Ice, Christie McFall 551.5 M163.
Water for Your Community, Edward Radlauer 628.1 B119.
Dittoed excerpts from Rachel Carson's "The Sea Around Us" (some interesting sections about origins and chemistry of water - non-technical)

(Continued)

Audio-Visual:

"Waters From the Mountain," 16 mm. sound, 20 minutes (snow)

Community:

Publications: (Continued)

Annotated Checklist of 200 Short Films for Writing Classes
Illinois Assn. of Teachers of English, Urbana, Ill. 35¢.

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 4 - Water

SUBJECT Art

ORIENTATION Water Supply

TOPIC/UNIT Painting

BEHAVIORAL OBJECTIVES

Cognitive:

Illustrate water areas using a mono-chromatic color scheme.
- a. depth
- b. purity

Affective:

Alert to the mono-chromatic tendencies of the water by identifying areas of changing depth or purity through the color intensity and value.

Skills Used:

1. Water color techniques
2. Painting techniques
3. Mixing Mono-chromatic colors
   1. value
   2. intensity
4. Awareness of water hues

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

I. Art

A. Mono-chromatic Painting
1. Discuss the colors of the water.
2. Concentrate on one color and paint a water scene varying the value and intensity of the color.
3. Study oceanscape paintings.

Outside or Community:

I. Art

A. Find paintings illustrating the colors of the sea.

Tie in with Aquatic Study #4.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications:	
Audio–Visual:	
Community:	

E. S. E. A. Title III — PROJECT I—C—E 59—70—0135—4

Environmental: **Integrated with:**

CONCEPT NO. 5 - Air **SUBJECT** Language Arts

ORIENTATION Air **TOPIC/UNIT** Speech

BEHAVIORAL OBJECTIVES

Cognitive:

Explain his concerns and solutions to air pollution problems in a campaign speech.

Affective:

Challenge the political complexity of an environmental issue through a campaign.

Skills Used:

1. Organization and compiling a speech.
2. Oral presentation as competition.
3. Techniques of balloting and voting.

STUDENT—CENTERED LEARNING ACTIVITIES

In-Class:

A. Conduct speech contest on "I Am Against Air Pollution Because...When Elected I Will ...(to stop air pollution)."

B. Have the children pretend they are running for office (as mayor or other local office) and they must convince their audience that "I am against air pollution because...and when I am elected I will.... (do what to stop air pollution)."
   1. After speeches, the class will cast ballots and vote for their best candidate.
   2. Winning candidate might give his report to other classes.

SUGGESTIONS FOR PREPARATION:

Tape speeches to be replayed by individuals for self-exam of speech skills or judged by local people.

Outside or Community:

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: Vital speeches-periodical excerpts or dittoes parts of speeches dealing with ecology. HEW - Reports, speeches by Sec. Udall. Silent Spring (excerpts) Robert Carson Thirty Basic Speech Experiences - Clark Publishing Co., Pocatello, Idaho 4-H Form for Judging Speaking Contests - 4-H Soil and Water Conservation. **Audio–Visual:** Our Environment 4 Set. Atmosphere Multi-Media Educational Program from EMC (Records and filmstrips) available from I-C-E. **Community:**	

E. S. E. A. Title III – PROJECT I-C-E 59-70-0135-4

Environmental:

Integrated with:

CONCEPT NO. 5 - Air

SUBJECT Mathematics

ORIENTATION Air Quality

TOPIC/UNIT Computation and Averaging

BEHAVIORAL OBJECTIVES

Cognitive:

Demonstrate a method for recording data and computing estimates of air pollution causes and amounts within a community.

Affective:

Promotes the use of car pools to parents and neighbors as a way of reducing air pollution.

Skills Used:

1. Collecting data
2. Taking averages
3. Computing averages
4. Estimation
5. Predicting

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Use a stop watch and ask children to count the number of breaths taken in one minute. (This will be from 14-18.) Compute the average number of breaths taken by the average class member in an hour; in a day.

B. Compute Problem
When the sulfur dioxide content of the air in New York City rises about .2 parts per million, 10 to 20 people die as a result. In the 5 years, 1965 to 1970, sulfur dioxide reached this level once every ten days.
1. What was the minimum number of people who died in New York City during the five years, 1965 to 1970, as a result of air pollution by sulfur dioxide?
2. What was the maximum number of people who died in New York City during the five years, 1965 to 1970, as a result of air pollution by sulfur dioxide?

(Continued)

Outside or Community:

A. Take the class to a moderately busy intersection in the neighborhood.
1. Have one group of children count all cars that pass in a 10-minute period.
2. Another group counts trucks and buses.
3. A third group counts any vehicle emitting visible pollution. (This will be done quietly using tallies on paper instead of voices.)
4. Car pools vs. one passenger cars.

B. On returning to classroom, present an impromptu math lesson to determine the proportion of cars visibly polluting the air. Make a rough estimate of cars in community and again figure proportion.

SUGGESTED RESOURCES

Publications:

Pollution: A Handbook for Teachers
by Dorothy Needham
Scholastic Book Service, $1.00.
Air and Water Pollution
Gerald Leinwand and Gerald Popkin,
Washington Square Press
630 - 5th Avenue, N.Y.,N.Y. 10020.
Air Pollution,
Addison Wesley, I-C-E RMC.
The Sources of Air Pollution & Their Control, Public Health Service Publications, No. 1548, U. S. Dept. of Health & Welfare, Wash., D.C.

Audio-Visual: (Continued)

0033 Air (10 Min.) $2.00 BAVI
Atmospheric Pollution, Filmstrip
at I-C-E RMC Ward's Scientific.
0678 Air Pollution, color (11 min.)
$4.00, BAVI.
Men at Bay, I-C-E RMC.
Our Environment Set 4 Atmosphere
A Multi-Media Educational Program
from EMC.
Record and filmstrip available
from I-C-E.

Community:

National Tuberculosis and
Respiratory Disease Association.

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM (Continued)

C. Obtain statistics from Air Pollution Control Section, Department of Natural Resources, Box 450, Madison, Wisconsin, 53701, concerning amounts of carbon monoxide and other dangerous gases that are being put into the air by each automobile every day. Based upon the projected number of automobiles that will be driven by Americans in 1980 how much more carbon monoxide will be put into the air in comparison to 1970?

PUBLICATIONS (Continued)

Air Pollution: Their Facts, Nat'l Tuberculosis and Respiratory Disease Association.
Air Pollution and You, John Quigley No. 676 University Extension offices in Wisconsin.
1971 EQ Index National Wildlife Federation at I-C-E RMC.
Environmental Analysis by Joseph Moran, Michael Morgan, James Wiersma, UWGB Little & Brown.
Testing for Air Pollution, U. S. Dept. of Agriculture Science Study Aid No. 5, Price 10¢.
Superintendent of Documents, U. S. Gov't Printing office, Washington, D. C. 20402.

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: | **Integrated with:**

CONCEPT NO. 5 - Air | **SUBJECT** Science

ORIENTATION Air Supply | **TOPIC/UNIT** Photosynthesis - Respiration

BEHAVIORAL OBJECTIVES

Cognitive:

Demonstrate a procedure for determining the importance of plants in an environment to provide air (oxygen) for animals.

Affective:

Believes in the importance of plants to provide air (oxygen) for the animal life by making statements that "We should be planting more grass and trees so that we can have more air (oxygen)."

Skills Used:

1. Observation
2. Controlling Variables
3. Drawing conclusions
4. Collecting and recording data

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Obtain 3 jars of equal volume.
   1. First jar.
      a. Put about 2 inches of clean sand in the jar.
      b. Slowly add pond water or aquarium water until the jar is half-full.
      c. Plant the green water plants in the sand and fill the jar to within 5 inches of the top.
      d. Screw the cap on tightly. Wind plastic-coated adhesive tape around the cap and jar so that air cannot get in or out. Now the plants are sealed in the jar.
      e. Place the jar where it will get some sunlight, but not very much. Don't let the jar get very hot or very cold.
   2. For 2nd jar, duplicate above procedure but leave out the plant and include a goldfish.
   3. For 3rd jar, duplicate #1 and add a goldfish.
   4. Observe systems following individual data sheets:

(Continued)

Outside or Community:

SUGGESTED RESOURCES

Publications:

"Concepts in Science"
Harcourt, Brace & World, Inc.
"Interaction of Man and the Biosphere", Rand McNally & Co., Chgo.
"Air and Water Pollution"
Permabound Books.

Audio—Visual:

"Life in a Cubic Foot of Air"
(11 min.) $2.25, (color) 4546 BAVI.
6576-6577.
"Poisoned Air" (Color) $9.00
1966 Bureau of Audio-Visual Instruction
1327 University Avenue
P. O. Box 2093, Madison, Wis.
Our Environment, Set 4 Atmosphere
A Multi-Media Education Program
from EMC. Record and filmstrips
available from I-C-E.

Community:

Visit local aquarium shop or have a "fish farmer" visit the class.

CONTINUED OR ADDED LEARNING ACTIVITIES

DATA SHEET:

	Jar #1	Jar #2	Jar #3
Describe Contents of Each Jar			
AM DAILY OBSERVATIONS PM Day #1			
AM Day #2 PM			
AM Day #3 PM			
Etc. for 10 days			

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 5 - Air

SUBJECT Science

ORIENTATION Air Pollution

TOPIC/UNIT Air Pollution

BEHAVIORAL OBJECTIVES

Cognitive:

Demonstrate a procedure that can be used to determine the effect of impure air on a plant or animal.

Affective:

Demonstrate his conviction that air pollution is dangerous to living organisms by writing several letters to those that contribute to the air pollution.

Skills Used:

1. Developing good hypotheses and testing them for accuracy
2. Making charts and graphs.
3. Using a control environment to test an hypothesis.

(Continued)

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Plant a small plant in each of 2 jars (using as little soil as possible). Seal one jar tightly and keep a growth record of both plants for 2 weeks.

B. Use 2 goldfish, each in a separate small type bowl. Change the water on one daily for fresh oxygen, leave the other goldfish bowl untouched to contaminate itself. Record the results for 2 weeks or long enough to observe results.

C. Use 2 mice, one in an open screen cage, the other in a jar or closed container with simulated smoke or a contaminated air supply. Closely observe the general health and behavior. Record the details.

Outside or Community:

A. Go on a field trip to a local paper mill area or industrial plant where the contaminated air comes in contact with trees, grass or shrubs. Make an evaluation.

B. Draw pictures or posters to demonstrate clean-air practices.

C. Write letters of objection to offenders of clean air, water or land in your area.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

Navarra, Zaffaroni, The Young Scientist, Book 5, Harper & Row, 1971, pp. 300-337.
Monthly Periodicals:
Ranger Dick
National Wildlife
Wisconsin Conservation
World Book Encyclopedia, Vol. #1.

Audio-Visual:

Our Environment Set 4 Atmosphere
Multi-Media Education Program
from EMC
Records and Filmstrips available
from I-C-E.

Community:

SKILLS TO BE LEARNED: (Continued)

4. Carrying a project through to completion.
5. Demonstrating projects of a scientific nature before the class with confidence.

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 6- Recources

SUBJECT Art

ORIENTATION Resource Distribution

TOPIC/UNIT Weaving

BEHAVIORAL OBJECTIVES

Cognitive:

Create a simple wall hanging i· orporating basic weaving techniques of:

a. removing and replacing threads
b. weaving in yarns

Affective:

Demonstrate his appreciation of the beauty of a hand-woven piece of cloth by displaying it so that others can see it.

Skills Used:

1. Basic weaving knowledge
2. Texture
3. Composition
4. Balance
5. Awareness of fabric

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

I. Art

A. Weaving Into Burlap
1. Discuss origin of weaving.
2. When weaving into burlap, threads may be pulled out and others pulled into their place.
3. Alternate threads may be removed to create a looser fabric.
4. Several threads may be removed and the remaining ones moved into curved or angular directions.
5. Spaces can be created by the removal of threads in a section rather than across the entire piece of fabric.
6. Colorful string, thread, or yarn may be woven in different sets of combinations to create interesting effects.

Outside or Community:

I. Art

A. Using burlap as a base, challenge students to identify and obtain other fibers, know their source and weave them into designs.

SUGGESTED RESOURCES

Publications:

"Weaving in the Round"
Arts and Activities, Sept. '70.
"New Designs in Weaving"
Donald J. Willcox, Van Nostrand Reinhold Company.
"Creative Designs in Wall Hangings"
Lili Bluemenau, Crown Publishers.
"Simple Weaving to Create Wall Hangings"
School Arts, Jan. '71.
"Op Art (Paper) Weaving"
Arts and Activities, Sept. '69.

(Continued)

Audio-Visual:

"Understanding the Craft: Weaving"
Educational Dimensions Corp.,
Sound Filmstrips.

Community:

CONTINUED OR ADDED LEARNING ACTIVITIES

PUBLICATIONS (Continued)

"Vary the Pace with Lano Lace"
J. Lyen, Arts & Activities,
71:14-16, April '72.
"Elementary Weaving"
M. Shaw, Arts & Activities,
p. 45, Feb. '71.
"Weave Your Own Thing"
E. Grim, Arts & Activities,
p. 22-3, June '70.

E. S. E. A. Title III - PROJECT I-C-E 59-70-0135-4

Environmental: **Integrated with:**

CONCEPT NO. 6 - Resources **SUBJECT** Social Studies

ORIENTATION Population **TOPIC/UNIT** U. S. - Mapskills

BEHAVIORAL OBJECTIVES

Cognitive:

Determine the abundance of a particular resource in an area by the map symbols representing the resource, the population of an area and other physical features.

Affective:

Support the positive relationship of type and amount of resources and the "quality" of life of people, as defined by the class.

Skills Used:

1. Learning to use a key in interpreting population maps, precipation maps, land-use maps, etc.

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

I. Social Studies

A. Use overhead to demonstrate what a key is and where it is located.
   1. Have each child show the class a keyed map of a region of the United States and explain what it tells him.
   2. Have class compare population map with natural resource map of region.
   3. On an outline map of this region the student will shade in areas of abundant natural resources. Also, on this same map the student should locate major metropolitan and industrial areas.

   The student should discover that the cities were located near areas of abundant resources.

Outside or Community:

I. Social Studies

A. Locate books featuring keyed maps.
B. Report on economic standards of people from different sections of this region. (Library)
C. Invite soil specialist of the Department of Natural Resources to explain the value of soil and its bearing on the quality of life in the community. (This procedure can be applied to other resource people available to the community.)
D. Integrate with Art Lesson on Weaving in Resource Distribution Concept #6.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: Exploring Regions of the Western Hemisphere, Follett, pp. 233-62, teacher's manual, pp. TG 61-64. **Audio-Visual:** **Community:** Chamber of Commerce Department of Natural Resources Soil Specialist Forester Game Warden Businessmen Farmer	

E. S. E. A. Title III – PROJECT I-C-E 59-70-0135-4

Environmental:

Integrated with:

CONCEPT NO. 6 - Resources

SUBJECT Science - Mathematics

ORIENTATION Unequal Resource Distribution

TOPIC/UNIT Measurement and Comparing Numbers

BEHAVIORAL OBJECTIVES

Cognitive:

Demonstrate one procedure for determining the depth of topsoil and subsoil. Describe the differences in the depths of topsoil and subsoil in each of the following:

a. a valley
b. flat plain
c. hillside

Affective:

Suggest that the low, high productivity of a given region may be related to the shallow; great depth of the top soil of that region.

Skills Used:

1. Observation
2. Research
3. Comparing
4. Measuring
5. Concluding
6. Using rate pairs

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

Outside or Community:

A. With a soil auger borrowed from the Soil Conservation Service, the class will bore soil samples from a local hillside and from a flat plain or valley below and measure the depth of the topsoil in inches. Record the depths; samples may be taken in sufficient number so that a representative soil depth for each area will be determined.

B. Measure length of grass or some species of plant growing on thick and thin topsoil areas.

C. After it is completed the child will determine type and yield of plant growth possible for a geographic region and how these affect growth of plant and food resources available to man.

D. Compare types of soil with their productivity using maps.

E. Go to an experimental field in the area and measure the size of the various kinds of corn; of the fertilizers or lack of fertilizers.

F. Invite a soil conservation service representative to compare soil depths and types in county and state, and discuss with class how crops and cropping systems are dependent on depth and type.

SUGGESTED RESOURCES

Publications:

Ecology: The Farm, Benziger at I-C-E RMC 130 Mc 10.

Audio–Visual:

Conserving Our Soil Today
11 min. 5079 (Film)
$2.25 Coronet 1960 BAVI.
4733 Treasures of the Earth,
$3.50.
0819 Yours Is the Land,
20 min. $6.75, BAVI.

Community:

Soil Conservation
Service Representative
County Agent
Local Farmer
Horticulturist

CONTINUED OR ADDED LEARNING ACTIVITIES

OUTSIDE OR COMMUNITY (Continued)

G. Soil and climate are two factors that determine the speed that a tree will grow.
Pupils can measure the height of a tree they have adopted (see p. 107) by using rate pairs.

Step 1 $\frac{\text{Height of child}}{\text{Length of his shadow}} = \frac{\text{Height of tree}}{\text{Length of tree shadow}}$

example:

$$\frac{51"}{17"} = \frac{x}{47"}$$

Step 2 $\frac{\text{Height of child x length of tree shadow}}{\text{Length of his shadow}} = \text{height of tree}$

example:

$$\frac{2397"}{17"} = 141" \text{ or almost } 12'$$

$$\begin{array}{r} 51 \\ \times 47 \\ \hline 357 \\ 204 \\ \hline 2397 \end{array} \qquad \begin{array}{r} 141 \\ 17\overline{)2397} \\ 17 \\ \hline 69 \\ 68 \\ \hline 17 \\ 17 \end{array}$$

(The metric system could also be used.)

To find:
H. Circumference of a tree -- use a tape measure.

Diameter -- $\frac{\text{circumference}}{1} \times \frac{7}{22}$ or $\frac{\text{circumference}}{3.1416 \text{ (pi)}}$

E. S. E. A. Title III — PROJECT I-C-E 59-70-0135-4

Environmental:

Integrated with:

CONCEPT NO. 6 - Resources

SUBJECT Art - Social Studies

ORIENTATION Resource Distribution and Conservation

TOPIC/UNIT Mobiles, Recycling, Bartering

BEHAVIORAL OBJECTIVES

Cognitive:

Construct a free hanging mobile which properly incorporates the principles of balance.

Affective:

Develop a visual sense of balance by developing mobiles that are balanced or by identifying those of others that are not balanced.

Skills Used:

1. Basic construction and principles of the mobile.
2. Art History Awareness
3. Observation
4. Balance Techniques

(Continued)

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

I. Art

A. Compare the importance of nature's balance to the importance of a mobile's balance in its construction. Students can brainstorm and come up with 2 or 3 ecosystems and talk of their importance and also experiment with balancing mobiles.
   1. Discuss and illustrate the basic principles of the mobile. (Use Calder examples.)
   2. Using actual items from nature or just nature shapes made out of paper or lightweight metal, have the student construct a mobile.
   3. Stress that shapes should be related, not just a haphazard assortment.

B. Make something new from a throw-away item. (recycling) Show class how you've converted it into a usable item. Make a display.

C. Pupils bring one to three items from home that are in good condition but they don't want anymore.

(Continued)

Outside or Community:

SUGGESTED RESOURCES

Publications:

Lynch, John, "How To Make Mobiles" New York, Viking Press, Inc.
Horn, George F., "Art for Today's School" Worchester, Mass., Davis Pub.
"People, Places and Things Prepared in Dimension" Arts and Activities, June '65.
"Skylight Mobiles" Arts and Activities, Sept. '70.
"Balance on a Shoestring" O. C. Locke, Arts and Activities, p. 14-16, June '70. (Continued)

Audio-Visual:

"Make a Mobile" B.F.A. BAVI.
Films:
Recycling, Stuart Finley, Inc. 21 min. I-C-E RMC film 500.
Junkdump, ACI Films, Inc. 20 min. I-C-E RMC Film 310.

Community:

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM: (Continued)

C. They "barter" with each other. Thus potential throw-away items now have a new owner and a longer life.

PUBLICATIONS (CONTINUED)

"Skylight Mobiles" W. D. Ehlers, Arts and Activities, p. 20-1, Jan. '71.
"Strawmobiles" K. G. Kite, Arts and Activities, p. 30-2, Sept. '70.
"Papercrafts and Mobiles" R. Perlmutter, Teaching Exceptional Children, p.134-41, Spring '72.
"Why Don't You Make a Mobile" M. Shaw, Arts and Activities, p. 32-3, April '72.

SKILLS TO BE LEARNED (Continued)

5. Bartering
6. Recycling
7. Creating

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO. 7 - Land Use **SUBJECT** Social Studies

ORIENTATION Recreational Land Use **TOPIC/UNIT** Vacation Planning - Map Reading

BEHAVIORAL OBJECTIVES

Cognitive:

List several problems resulting from high population density on land used for recreational use.

Affective:

Volunteer suggestions for better management of a given land area based on population density and appropriate land use.

Skills Used:

1. Map use
2. Organizing
3. Drawing conclusions

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Organize students in groups of 2.
B. Instruct students to plan a typical family outdoor weekend in Wisconsin.
   1. Given highway map of Wisconsin, trace the route from your community.
   2. Briefly describe physical setting of your destination.
   3. Describe activities you plan to do while you are there.
   4. Preparation for trip
      a. getting car ready
      b. types of food
      c. how will it be prepared?
      d. waste products and how disposed
      e. jobs to be done and who will do them
      f. miscellaneous
C. Teacher directed activity
   1. Draw a square on the floor 6'x6' with water paint. (This will be recreational area.)
   2. Draw circle on other side of room. (This is home community.)

(Continued)

Outside or Community:

A. Outside speaker.
   1. A park manager to tell how he plans for population density and land use.
   2. City recreation director to tell how he plans for population density and land use in city.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications:	CLASSROOM (Continued) C. 3. Either teacher or capable student act as recreational area manager. 4. Teacher invite two groups to come to circle - direct them to travel to recreational area. 5. Solicit needs and uses for land area from this group and list on board. 6. Invite two more groups to go to circle and travel to recreation area. 7. Solicit again needs and uses of land area and put on board. 8. Invite more groups in above process. 9. When crowded, have area manager extend boundaries of recreation area. 10. Invite more groups. 11. When capacity of land is reached, list them together on the board. (Have children list for themselves) problems encountered in increased density on recreational area.
Audio–Visual: The Litterbug, color, 8 min. Ass'n Films (Free loan from I-C-E.) Nature's Way, (The Inland Pond) 14 min., color film (Free loan from I-C-E.) Nation of Spoilers, DNR film library (Free loan.) Simulation Game: Make Your Own World, (Free loan from I-C-E.)	
Community:	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 7 - Land Use

SUBJECT Math

ORIENTATION Land Use

TOPIC/UNIT Area - Averaging

BEHAVIORAL OBJECTIVES

Cognitive:

Explain that city streets require a considerable fraction of each city block, using computations and sampling skills.

Affective:

Express an opinion that too much of our land area is covered with streets.

Skills Used:

1. Computation of area
2. Measuring
3. Comparing
4. Averaging

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Have students compute the area of the four streets which border the school grounds.
B. Have students compute the area of the school lot.
C. Make a comparison of A & B by plotting the area of the streets upon the school-grounds.
D. Make a comparison of land used for the streets and land used for other purposes on each student's home block.
E. Compute average amount of:
   1. land used for streets per city block.
   2. on the average, approximately what fraction of each city block is used for streets.

Outside or Community:

A. Integrate with Art Lesson on Reliefs in Population Density Concept #7.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications:	Coordinate with Language Arts Lesson for this problem area. (Concept #7) (Creative Writing)
Audio–Visual:	
Community:	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 7 - Land Use

SUBJECT Language Arts

ORIENTATION Land Use

TOPIC/UNIT Creative Writing

BEHAVIORAL OBJECTIVES

Cognitive:

Write an article incorporating his impressions on how highways change the use of the land.

Affective:

Dispute the question of the basic necessity of good land use to ensure the continuation of enough land to provide food, moisture and oxygen for animals to live.

Skills Used:

1. Expository writing
2. Questioning
3. Discussion
4. Draw conclusions

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Introduction of land use by highways by:
   1. Field trip to local express exchange or roads adjoining.
   2. Film: Highways Are for People. (Try this film without sound with any appropriate recorded music.)
   3. Film: Automania.
   4. Teacher may find pictures of highway mazes.

B. Without discussion, students write their impressions of these types of land use.

Outside or Community:

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications:	
Audio–Visual: Film: Highways Are for People, 1968, 16 mm. sound, 27 min., Federal Highway Administration. Automania 2000 Animated Contemporary Films, McGraw-Hill, 828 Custer Avenue, Evanston, Illinois, 60202.	
Community: Road Commissioner or good representative.	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO. 7 - Land Use **SUBJECT** Science

ORIENTATION Proper Use of Atomic Energy **TOPIC/UNIT** Atomic Energy

BEHAVIORAL OBJECTIVES

Cognitive:

Explain ways each use is either constructive and/or destructive to the environment when given a list of uses for nuclear energy.

Affective:

Gather evidence that man can and does control energy and that people are the great determining factor in the use of nuclear energy.

Skills Used:

1. Organizing reports
2. Giving oral reports
3. Observation
4. Judgment values

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. View film "Our Friend the Home." Discussion - small groups.
B. Make a list of constructive uses of nuclear energy:
   1. Atomic clock.
   2. Propulsion of ships and subs
   3. Change salt water to fresh water
   4. Tracers to diagnose disease.
   5. Cancer treatment
   6. Radioisotope
C. Make a list of destructive uses of nuclear energy:
   1. Hydrogen bomb
   2. War heads for missiles
   3. Etc.
D. List problems:
   1. Control of weapons
   2. Radiation
   3. Atomic Waste
E. Ask pupils to volunteer for individual reports to share with classmates.
   1. Use of Atom in WWII.
   2. Nuclear energy in military defense
   3. Savannah
   4. Nautilus
   5. Desalination plant

Outside or Community:

(Continued)

SUGGESTED RESOURCES

Publications:

People and Their Environment,
Teachers Curriculum Guide to
Conservation Ed., Gr. 4-5-6,
pp. 70-72.
Infinite Energy - Student booklet,
Free from Wis.-Mich. Power Company
Nuclear Power Plant Infor. Center
Two Creeks, Wisconsin

Audio-Visual:

Our Friend the Atom,
Radiated Seed ordered from Oak Ridge
Atom Industries, Oak Ridge, Tenn. or
BAVI - Madison

Community:

Speakers from:
Industry
Medicine
Agriculture
How is the atom used in their work?

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM (Continued)

E. 6. Nuclear energy used in medicine
7. The radioisotope in science research.
8. The radioisotope in industrial use.
9. Value of Atomic clock
10. The radioisotope in agriculture
11. Nuclear energy used in space explorations.

F. Form groups for panel discussions or debates.
1. Pros and cons of the use of nuclear weapons in warfare.
2. Pros and cons of the use of nuclear power plants.
(Use Infinite Energy booklets and films as resource.)

G. Prepare a current events bulletin board showing newspaper and magazine articles about nuclear energy, coal, uranium, oil and gas, along with commentaries from the class members as to the significance of each item as man looks into the future to make provisions for keeping his machines moving. Will nuclear energy compete with coal?

Environmental: **Integrated with:**

CONCEPT NO. 7 - Land Use **SUBJECT** Mathematics and Social Studies

ORIENTATION Population **TOPIC/UNIT** Ordered Pairs - Rate Pairs

BEHAVIORAL OBJECTIVES

Cognitive:

Construct a table and graph that shows how available facilities, space and resources will increase in the next 10 years; 20 years, if population growth continues at the present rate.

Affective:

Suggest how the increased population growth will affect land use and centers of population density.

Skills Used:

1. Collecting data
2. Organizing
3. Constructing Pictographs
4. Making judgments
5. Planning a community
6. Making decisions
7. Working with a group

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

I. Mathematics and Social Studies

A. With the principal's help, the child will determine from school records, the present ratio of students to each classroom, teacher, basketball, desk or area of school space.
   1. Construct graphic display showing this ratio (ratios).

B. Using projected population growth information set up ratios of students to classroom teachers, basketball, etc. for ten years from now, if present number of teachers, rooms, etc., do not change.

C. If a community has 100 families, each family having an average of 2.3 children, how many people are in this community? (We're assuming each family has 2 parents.)
   100 x 2.3 + 200 = 430

D. Let pupils in small groups draw plans for a town of 100 families. They should indicate apartments, schools, shopping centers, libraries, parks, streets, etc. Symbols can be used, e.g.

(Continued)

Outside or Community:

I. Social Studies

A. Invite mayor or local official in to speak to class and give information on park and public facility use at present time. Ask him to predict future needs.

B. Using predicted growth in population from above and ordering pair skills, show increase in facilities and space (in graphic way) needed to maintain resources available per person.

C. Discuss.

SUGGESTED RESOURCES

Publications:

The Population Bomb,
Ehrlich, Paul R.
New York Ballantine Books, 1968.
Our Precarious Habit,
Benarde, Melvin,
New York W. W. Norton and Co., Inc.
1970.

Audio–Visual:

"Population Trends - Ecological Crisis" at I-C-E RMC K14.

Community:

Mayor
Park Director

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM (Continued)

D. /6/ = apt. for 6 families
Groups show their plans to class and explain. Did the group make good ecological use of the land?

E. Propose a hypothetical question to the groups.
"What effect will a doubling of the population have on your community?"
Let the groups again work together and list possible effects. Later the groups report their results.
more crime
polluted water
schools overcrowding
lack of adequate parks
lack of adequate parking facilities
overcrowding in housing, etc.
more pupils per teacher

F. "What are some possible solutions?"

conserving	smaller families
recycling	mass transit
driving at lower speeds	car pooling, etc.
marrying at later years	educating

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO. 7 - Land Use **SUBJECT** Art and Social Studies

ORIENTATION Population Density and Land Use **TOPIC/UNIT** Relief

BEHAVIORAL OBJECTIVES

Cognitive:

Describe the effect of density on different types of neighborhoods and make a judgment as to whether the effect will be positive or negative.

Affective:

Demonstrate awareness of different types of neighborhoods and the effect of density on them by finding examples of each within his community. Defend a given change as having either a negative or positive effect on a particular type of neighborhood.

Skills Used:

1. Cutting (piercing) and folding
2. Use of stencil knife
3. Drawing
4. Observation

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

I. Art

A. Paper relief (Paper is pierced so that forms may stand (protrude) from the paper.) (Example on back.)
1. Divide class into groups. Student in the various groups are responsible for depicting different types of neighborhoods by drawing and then cutting scenes in their papers.
   a. Rural
   b. Small town
   c. City
   d. Large city
   e. Harbor town
   f. Industrial cities, etc.
2. Density can be studied by giving students a specific number of people or houses to cut into their sheets of paper. Example on back.
3. Instruct child to cut a house, then a person, now another person, 3 children, a dog, a new baby, etc.; soon there is no room in "yard." Stress population growth and density.

(Continued)

Outside or Community:

I. Social Studies

A. Field trips into various types of neighborhoods.
B. Students bring in pictures of various types of neighborhoods.
C. Field trip to industrial sites.

SUGGESTED RESOURCES

Publications:

"Creative Paper Design"
Reinhold Pub.
"Paper to Amaze"
M. Seehafer, Instructor, 81:73
April '72.
"City Scopes in 3D"
M. B. Bowman, Arts and Activities
p. 36-7, June '71.
"Aesthetic Education for What"
(Art in Relation to Capacity)
School Arts, April '72, p. 37.

Audio-Visual:

"People of a City'
Brown County Library.
"Environmental Awareness - City"
KT 16, I-C-E RMC.
"Creating With Paper"
B.F.A. BAVI.

Community:

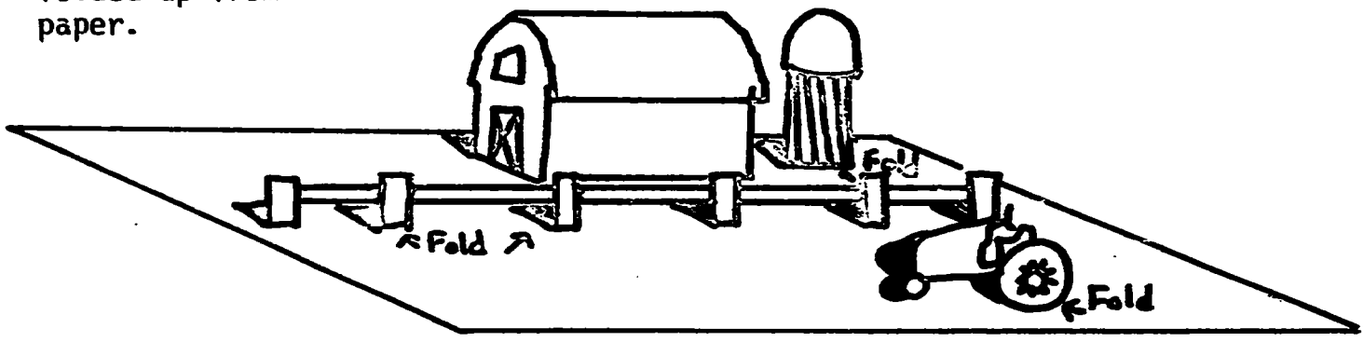
CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM: (Continued)

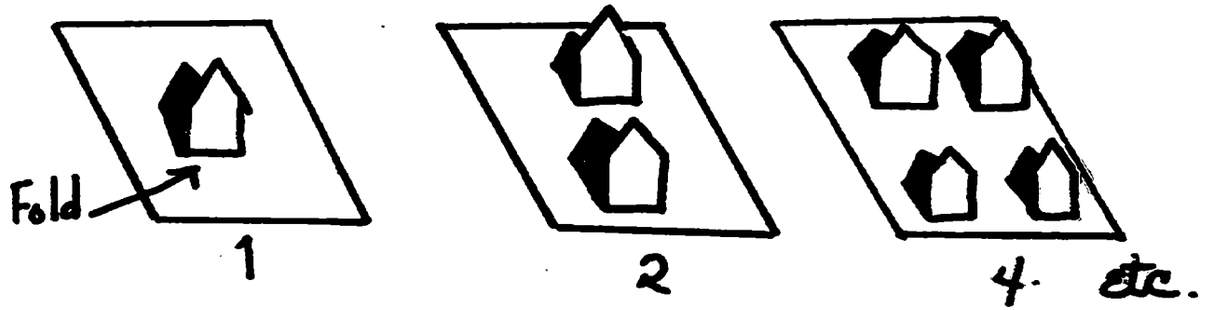
A. 4. Create a community with fold-up sheets. One student makes a store, one makes one house, another makes another house, a bank, school, church, etc. or each child could create his own town on his sheet of paper.

Example 1

Everything is folded up from paper.



Example 2



E. S. E. A. Title III – PROJECT I-C-E 59-70-0135-4

Environmental:

Integrated with:

CONCEPT NO. 7 - Land Use

SUBJECT Art

ORIENTATION Changing Land Use

TOPIC/UNIT Sculpture - Shadow Box Dioramas

BEHAVIORAL OBJECTIVES

Cognitive:

Construct a diorama of before and after scenes that illustrate changes in land or water use, that have occurred over a period of years, for which man has been responsible. Judge whether the change has been beneficial or harmful and give the basis for his decision.

Affective:

Promotes the idea that change of an environment, by man, can be accomplished for the benefit of man without destroying the environment if man includes the effect on the environment in his planning.

Skills Used:

1. Use of multi-media materials:
   a. Found objects
   b. Glue
   c. Paper
   d. Shoe boxes
2. Cutting
3. Construction of a diorama

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

A. "Before" and "After" scenes of a given area using a shadow box diorama.
Examples:
1. A woodland becomes a suburb.
2. A clean lake becomes a polluted over-populated tourist trap.
3. A rural area becomes a large city.
4. A junk yard is cleaned up.
5. A cart trail becomes a freeway interchange.
6. An Indian canoe is replaced by an ocean liner.
7. A parade route before and after the parade. (litter)

Outside or Community:

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: "Drawing for Environmental Awareness" A. P. Taylor, il., School Arts, 68:12-13 March '69.	
Audio–Visual: "Nation of Spoilers" Brown County Library. "Ecology - The Game of Man and Nature" I-C-E RMC SG 2. "Dirty Water" - The Water Pollution Game, I-C-E RMC SG 3.	
Community:	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 7 - Land Use

SUBJECT Art

ORIENTATION Land Use - Population Density - Transportation

TOPIC/UNIT Design and Construction

BEHAVIORAL OBJECTIVES

Cognitive:

Design and construct a type of home which may have to be used by man in the future, as a result of the depletion of presently used natural resources.

Affective:

Gather information that illustrates the importance of effective land use for housing purposes and on the consequences of increased population growth on the requirement for land used for housing purposes. Suggest the need for a change in people's use of land, suitable for other purposes, for housing and a de-emphasis of the use of the

(Continued)

Skills Used:

1. Design
2. Drawing
3. Construction skills using various materials.

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Discuss problems which may occur in the future as population increases and the environment must be used to the best advantage to accommodate the people.
   1. Will there be room?
   2. What if land areas are not available?
   3. Where could people live?
   4. How could these areas be used?

B. The students will design and construct "homes of the future." Examples:
   1. Space rocket homes
   2. Submarine homes
   3. Tree houses
   4. Floating homes
   5. Anything they dream up!

NOTE: Tie in with Settlement Unit. Extra Reference.

Outside or Community:

SUGGESTED RESOURCES

Publications:

Community Planning Handbook,
I-C-E RMC.
"A Study in Environment"
Leano Nalle - School Arts, Apr. '72.
(building mini-landscapes)
"Space Age Shapes" 30 Artist
Jr. Magazines, Vol. 3, #3, '62.
"Carve a Box! Exploration into
Space and Form" L. Olson,
Arts and Activities, p. 24-27, Dec. '71.
"Cardboard City" Mixed Media,
R. R. Guthrie, School Arts, 68:32-3 S.68.

Audio-Visual:

Designing With Everyday Materials:
Corrugated Paper B.F.A. BAVI.

Community:

CONTINUED OR ADDED LEARNING ACTIVITIES

AFFECTIVE: (Continued)

single family structure for housing.

PUBLICATIONS (Continued)

Our Man-Made Environment, I-C-E RMC
"Architecture for Young Beginners"
T. Thatcher, School Arts, 68:7 Mr '69.
"Architectural Design in the Classroom"
T. Thatcher, School Arts, 68:7 Mr. '69.

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 8 - Values and Attitudes

SUBJECT Social Studies

ORIENTATION All Terrain Vehicles and Land Use

TOPIC/UNIT Which type of transportation is most valuable for you?

BEHAVIORAL OBJECTIVES

Cognitive:

Design a recreational area for an all-terrain vehicle. Justify, in writing, why land should be used for the purpose of recreation for use with all-terrain vehicles even though it reduces land available for production of crops or wildlife.

Affective:

Demonstrate concern for environmental quality by indicating, in a discussion, their own commitment to personally avoid doing those things which cause deterioration to the environment.

Skills Used:

1. Persuasive writing
2. Investigate
3. Drawing conclusions
4. Classifying

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Pupils as a class list on board all land vehicles they can think of. (cars, tractors, mini-bikes, buses, trucks, snowmobiles, etc.) Then pupils individually select 10 they feel are important. Then from the 10 they choose 3 they feel are necessary. Then class discusses each child's choices and why they chose their 3 vehicles.

B. Using the class list of all land vehicles pupils should classify them. Some examples would be recreational vs. business, luxury vs. necessary, vehicles that are helpful in combatting pollution vs. vehicles that pollute.

C. Recreational Vehicles
   1. Place large pictures of terrain vehicles on display:
      snowmobiles
      dunebuggies
      minibikes
      trailbikes
      motorcycles

(Continued)

Outside or Community:

A. Get speakers from local bus department to speak to class. Some questions that can be asked include:
   advantages and disadvantages of bus transportation
   cost of bus riding vs. car
   future plans for city concerning mass transit
   planning of routes

B. Snowmobile Clubs

C. Department of Natural Resources

D. ATV Dealers and Salesmen

E. Trees for Tomorrow (Snowmobile Instructor Course)

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications:	CLASSROOM: (Continued) C. 2. Give student a preference form to simulate an order form to order the vehicle of his choice. NEXT DAY 3. Determine number of each vehicle needed so each student receives a copied picture of vehicle he ordered. D. Student Activity 1. Divide into groups of similar vehicles. a. List rules for personal safety. b. List places in your area you would choose to ride your vehicle. c. List reasons why using this vehicle is fun for you. d. List ways you might affect the environment of the area you choose to use your vehicle. e. If you would build a recreational area for your vehicle, what would it be like? E. Class Activity 1. List as a class the physical characteristics of recreational area for all vehicles. (Students will discover similar characteristics.) F. Small Groups 1. Design Recreational Activity (using whatever materials necessary) to meet needs of all-terrain vehicles. 2. Submit and defend in writing why this area should be built. Suggestions: a letter to teacher, mayor, legislators, DNR.
Audio–Visual: Filmstrip: Transportation, FS, St 20, I-C-E RMC.	
Community:	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 8 - Values and Attitudes

SUBJECT Social Studies

ORIENTATION Wildlife Destruction for Furs

TOPIC/UNIT Exploration of North Central States

BEHAVIORAL OBJECTIVES

Cognitive:

Show ways to manage and conserve fur-bearing animals in Wisconsin by making a poster. Explain, with examples, the need for legislation protecting the fur-bearing animals in Wisconsin.

Affective:

Investigate the wildlife of their area and determine what can be done to improve the number of animals in the area.

Skills Used:

1. I.M.C. Research
2. Map reading
3. Designing and constructing a poster.

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Research first White men to come to Wisconsin.
   1. Who were they?
   2. Why did they come?
   3. When did they come?
   4. What were furs needed for?
   5. Trace routes on map.
   6. What fur-bearing animals did they find?

B. Describe steps in fur industry.
   1. Trapping and farming.
   2. Skinning.
   3. Stretching.
   4. Curing.
   5. Selling and trading.
   6. Grading.
   7. Tanning.

C. By research and/or resource person, investigate and describe:
   1. Early trapping practices.
   2. Laws enforced now to protect fur-bearing animals.

D. Make posters showing ways to manage and conserve fur-bearing animals in Wisconsin.

Outside or Community:

A. Library
   1. Locate books on trapping, etc.
   2. Identify and illustrate early trapping methods.
   3. Locate animal books written in the first person.
   4. List near extinct species resulting from fashion fads.

B. Community
   1. Invite local game warden to speak on laws protecting wildlife.
   2. Invite manager of local mink farm to speak on care of animals and use of furs.
   3. List wild animals found locally and restrictions on same.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

Books:
Trails to Freedom,
Ginn & Co., pp 98-112.
French Explorers by
Walter Buehe.
The Only Earth We Have by
Lawrence Pringle.

Audio-Visual:

Films:
University of Wisconsin:
- Animal Habitats
- The Beaver
- Beaver Valley
- Fur Trade
- Fur Trapper of the North
- Fur Trappers Westward
- Protectors of the Outdoors
- One Day at Teton Marsh (Otter)

Community:

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO. 8 - Values and Attitudes **SUBJECT** Language Arts

ORIENTATION Attitudes toward wildlife. **TOPIC/UNIT** Creative Writing

BEHAVIORAL OBJECTIVES

Cognitive:

Will express their ideas through creative writing on the need for a pollution-free environment as is illustrated in a given wildlife stamp.

Affective:

Express his creative ideas and feelings about need for a pollution-free environment in a paper that is to be read to the rest of the class or put on display for others to read.

Skills Used:

1. Creative writing

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Teacher or pupil places conservation stamps (National Wildlife) on front table.
   1. Each child chooses any one of the group.
   2. Child pastes this on writing or composition paper.
   3. Teacher suggests the children to now write a poem, paragraph, story or just write statements about their stamp.
   4. Display these papers.

B. Alternate Activity
   1. Use same National Wildlife stamp described above.
   2. Write a Cin Quain poem, using the form below to describe your opinion or feelings about what you see on the stamp.
   Line 1 - 1 word (this becomes your key word.)
   2 - 2 words
   3 - 3 words
   4 - 4 words
   5 - 1 word

(Continued)

Outside or Community:

SUGGESTED RESOURCES

Publications:

National Wildlife Magazine,
April - May, 1974.
National Wildlife Federation
I-C-E RMC.

Audio-Visual:

National Wildlife Stamp or any colorful stickers.
Start a picture library and thus involve students.

Community:

Audubon Society
National Geographics
Wis. Historical Society

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM (Continued)

C. Choose an endangered species. Have pupils write as if they were the creature. "I am...." They could cover these ideas.
   1. Where animal lives.
   2. How animal helps us.
   3. How animal "feels" toward people (or other forces) that are diminishing its population.
   4. Why animal lives where it does.
   5. How we can help the animal to survive.

D. Anagrams -

	Birds		Flowers
C	cuckoo	C	cardinal
O	owl	O	orchid
N	nuthatch	N	narcissus
S	sparrow	S	snapdragon
E	eagle	E	evening primrose
R	robin	R	rose
V	vireo	V	violet
A	albatross	A	anemone
T	tanager	T	tulip
I	ibis	I	iris
O	oriole	O	opium poppy
N	noddy	N	nasturtium

Environmental:

Integrated with:

CONCEPT NO. 8 - Values and Attitudes **SUBJECT** Mathematics

ORIENTATION Attitude Toward Pollution Abatement Laws **TOPIC/UNIT** Ratio and Ratio Comparison

BEHAVIORAL OBJECTIVES

Cognitive:

Write in ratio forms, the voting trend of city, state, and national governing bodies on pollution abatement laws using selected examples before 1950 and after 1960.

Affective:

Alert to laws which indicate positive attitudes of the politicians toward pollution abatement by identifying examples in newspapers and periodicals.

Skills Used:

1. Collection of data
2. Setting up data tables
3. Ratios
4. Interpreting data

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Write to Senator Proxmire or Nelson to find statistics of voting on environmental questions and pollution abatement laws.
   1. From these materials set up table to show the change of voting, trend comparing your earliest reports with the later ones.
   2. Set up ratios of pro and con for each bill.
   3. Write a short statement to clarify the trend and explain the change.

B. You may repeat the process with the SST.

C. Use the simulation Game Recycling and Resources from I-C-E RMC SG 6, Set I.

Outside or Community:

A. Business or factory manager who has to deal with pollution abatement laws invited in to speak to the class.

B. Write a letter to encourage further support of pollution laws.

C. Try to find out kinds of local pollution laws such as fire burning permits, muffler usage.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: Man's Control of the Environment Congressional Quarterly #100 at I-C-E RMC. Pollution, Holt, Rinehart & Winston at I-C-E RMC. Congressional Record from the State Senator. **Audio-Visual:** "Living Earth" BAVI. "Recycling and Resources" Kit SG 6 from I-C-E RMC Set I. **Community:** Newspaper Reporter Mayor or Businessman	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO. 8 - Values and Attitudes **SUBJECT** Mathematics

ORIENTATION Attitude Toward Rat Population **TOPIC/UNIT** Computation - Estimating

BEHAVIORAL OBJECTIVES

Cognitive:

Compute the total pounds of food destroyed by rats in the local community based on average rat population per thousand persons and the amount of food eaten by a rat per year.

Affective:

Suggest that rats cause destruction of food and property in a community. Participate in a rat extermination program organized by the school or community.

Skills Used:

1. Estimating
2. Computing totals
3. Comparing
4. Measuring

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Students and teacher will have discussion on rat problem in their area.

B. Through library research, local newspapers, consulting home and farm owners and industry, students will learn about the seriousness of rat destruction and how it affects the economy.

C. Measure length of 9 inches. Double it to get idea of size of full-grown rat (including tail).

D. He raises a new family of six every 30 days.
   1. How many rats are born to one set of parents in a year if there are 12 families a year?
   2. A rat can devour 17 lbs. of garbage a year. How much would a family of six devour in 3 years.
   3. A rat carries bubonic plague via the rat flea. 25 million people died from this illness in Europe in 1343.

(Continued)

Outside or Community:

A. To note damage and prevention thereof:
   1. Visit farms
   2. Visit feed mills
   3. Storage areas or warehouses used by stores, restaurants, and industry.
   4. Dumps

SUGGESTED RESOURCES

Publications:

McCue, George, Ecology - The City, Benziger, Inc., N.Y. at I-C-E RMC #130 McIO.

Audio—Visual:

1815 Rat Problem $3.00 1954
23 minutes - (Castle U. S. Army)
BAVI.
3623 Control Rats, 1956 BAVI.

Community:

County Agent
Feed Mills
Warehouses
Farm
Restaurants

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM: (Continued)

D. Compare this to the size of New York City's population today.
4. From given facts, estimate annual cost of rat damage.

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO. 8 - Values and Attitudes **SUBJECT** Art - Science - Language Arts

ORIENTATION Man's Environment **TOPIC/UNIT** Artistic Creation

BEHAVIORAL OBJECTIVES

Cognitive:

Analyze the value of natural materials that can be used in a creative way to make a unique communication. Demonstrate the use of natural materials in making a creation, (sculpture, painting, collage) that can be used to communicate a given message. Compare the use of natural and man-made (Continued)

Affective:

Choose to use natural materials instead of commercial art materials in the creation of objects, paintings, etc. that can be used to convey messages or provide aesthetic value.

Skills Used:

1. Exploration
2. Discovery
3. Use of Imagination
4. Classifying
5. Making a chart
6. Using adjectives

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

I. Art

A. Man's environment can be seen as a storehouse of materials which may be used in his artistic creations.
   1. These materials can be found in the air (Example - wind makes the mobile move), water (Example - shells may be used for jewelry), the earth (Example - rocks may be used for sculpture) and the environment's populations (Ex. - sheep's wool for weaving).
   2. Look around your site. What materials do you see that might be used for artistic creation.
   3. Which may be used without damage to the environment? What varieties can be created that will make the environment more pleasing?
      a. Find such materials and create.

Outside or Community:

I. Art

A. Take an exploration field trip. Find materials which may be used for artistic creations.

B. Make a chart:
(See back of page.)

C. Exploring and observing habitats of animal life.
   1. Ask following questions:
      a. What animals would you expect to find in this area?
      b. Are they vertebrate or invertebrate?
      c. What are the needs of these animals?
      d. Where do the animals live?
   2. Work in small groups. They should record this information.
      a. Record animals that you actually see.
      b. List evidence (signs) of animals (homes, nests, feathers, excrement, partly consumed food, etc.).
      c. List habitats for wildlife (grass, cultivated field, hedges, swamp, etc.).
      d. List animal foods in area (plants, bark, berries, etc.).

(Continued)

SUGGESTED RESOURCES

Publications:

"Face Up With Texture; Mask Designs" G.G. Allrutz, Instructor, 80:116 O '70.
"Recreating the Mediocre and the Discard" B. Stubbins, School Arts, 70:11, '71.
"Creative Uses of Scrap Materials" R. G. Lewie, School Arts, 69:11.
"Mosaics: Tiles and Beans" S. T. Bond, Instructor, 79-93, Jr. 1970.
"Printing: Plant Prints" I. Geary, Instructor, 79:94, Jr. 1970.

Audio-Visual:

Collage: Art From Found Materials, B.F.A. BAVI.
Who Was Here, field guide, I-C-E RMC.

Community:

CONTINUED OR ADDED LEARNING ACTIVITIES

OUTSIDE: (Continued)

C. 3. Back in classroom:
   a. Write how you feel about your exploration trip.
   b. Identify and describe three animal habitats.
   c. How does man affect the animal's habitats? How can man help the wildlife in this area?
   d. Classify animals as carnivorous (meat-eating), herbivorous (plant-eating) or omnivorous (both).

4. As an alternative, use Who Was Here, field trip guide from I-C-E. (Complete lesson is attached.)

fuzzy					
crispy		picture of elm leaf		picture of oak leaf	
prickly	ever-greens		burr		spines
bumpy				bark of tree	
smooth	acorn		dande-lions		daisy
squeezy			mush-rooms		
fluffy					

(B. Chart from page 103)

COGNITIVE: (Continued)
materials in a creation: a. cost b. variety available
c. effect on environment

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WHO WAS HERE?

An out-of-doors animal ecology exercise for grades 2-5 based on:

Concept #2 All living organisms interact among themselves and their environment, forming an intricate unit called an ecosystem.

and

Concept #3 Environmental factors are limiting on the numbers of organisms living within their influence. Thus, each ecosystem has a carrying capacity.

We all know that animals are fun to see. We also know that animals often are hard to see. Sometimes we can tell that an animal was in a place by the signs he left. Many times we can tell what kind of animal was there because of the kind of sign he left behind.

There are many, many kinds of animals which leave signs. Some are large like deer and raccoon. Some are very small like insect grubs, spiders, and beetles. You probably have never even seen a lot of them when they were right under your nose while you walked in wild places.

There are so many kinds of animals. This is important because they all have something to do. They are a part of nature. They help keep nature working. Each kind is needed somehow. Learn not to jump or scream if you see some of these animals. Remember they are doing their job to keep nature in balance.

There can only be just so many of each kind of animal in any place. These animals need homes and food. As you study the tracks and traces of animals, look for their homes. Look for food for the animals. Remember that homes and food must be protected so that animals can survive.

Supplies Needed

Exercise sheet, cardboard pad or clipboard, pencil, ruler

What to wear

Old clothes, old shoes. Dress warmly if it is cold outdoors. This exercise can be done in the winter.

Where to go

Almost any field area where trees, shrubs, tall grass and other natural vegetation is present. Parks with trees and bushes may be suitable. Undeveloped areas and vacant lots may be used.

Grouping

Divide students into groups of four and assign field duties as named in the exercise sheet. You may obtain the help of a parent with an interest in nature to assist you in the field.

Preparation

Teachers using AAAS science will find that this activity can be incorporated into the lesson on animals at the 3rd grade level. Teachers using other science series should incorporate this field exercise into a unit on animals at the 2nd, 3rd, 4th or 5th grade level.

Use films, slides, filmstrips, kits, poster kits, etc. as preparation for what may be discovered. Discuss beforehand the importance of observation techniques. Contact Project ICE for audio-visual resource material listed in the Project ICE Resource Bibliography.

BEST COPY AVAILABLE

Field Use

Different sections of the exercise may be done simultaneously when appropriate. Stress the discovery process. Let the children find out for themselves. Leave some things unanswered until they do follow-up research from resource materials in the classroom or IMC. Give one exercise sheet for "Who Was Here" to each student. Assign the sections of the exercise which are appropriate for use at your field site. Explain which discoveries go into each page of the exercise sheet.

Follow up

Obtain resource materials from the IMC. Have the students obtain information from the resource materials after the field trip.
Use the information gained for special projects such as:

Art projects
Reports
Discussion session
Spelling words

Be sure to stress the concept themes in the follow-up work. Use the food chain idea. Incorporate sound conservation ideas into the follow up.

Resource Materials

Pamphlets:

Animal Tracks
Wisconsin Dept. of Natural Resources
Box 450
Madison, Wisconsin

Wisconsin Mammals
Publication 351
Wisconsin Dept. of Natural Resources
Box 450
Madison, Wisconsin

Wisconsin Wildlife
Publication 613
Wisconsin Dept. of Natural Resources
Box 450
Madison, Wisconsin

Magazines:

Wisconsin Conservation Bulletin
available in school library:
Audubon Magazine
National Wildlife
Ranger Rick
National Geographic

Charts & Bulletins:

National Audubon Society
950 Third Avenue
New York, New York 10022

Books:

Peterson Field Guide Series, Houghton-Mifflin, Boston
- A Field Guide to Animal Tracks, O. Murie
- A Field Guide to Insects, D. Borrer and R. White
- A Field Guide to Reptiles and Amphibians, R. Conant
- A Field Guide to the Birds, R. Peterson
- A Field Guide to the Mammals, Burt and Grossenherder

The Golden Guides, H. Zim, editor
- Birds
- Mammals
- Reptiles and Amphibians
- Insects
- Butterflies
- Spiders and Their Kin

Large Photos:

Animal Study Prints (Series)
McGraw Hill Publishing Co.
(Contact Project ICE for loan copies, see the ICE resource catalog.)

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EXERCISE SHEET FOR WHO WAS HERE

Student _____

Grade _____ Date _____ Team Number _____

Animal Survey Team (team number _____)

Wildlife Biologist _____

Wildlife Technician _____

Game Manager* _____

Game Warden _____

*The Game Manager is the head of the survey team. He or she must report the findings of the survey to the District Director (your teacher) and the class.

Directions:

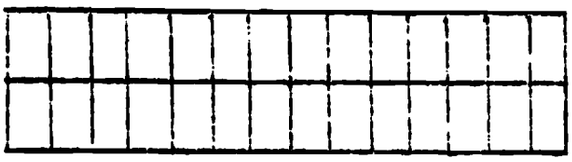
Each 4-member team will do the sections of the exercise assigned by the teacher. The students are to observe carefully and to write in their reports in the proper space. Each person should write in his or her observations. The survey team should discuss their findings. The Game Manager in each team should report the results of this discussion during the follow-up session. The exercise sheet should be turned in to the teacher at the end of the survey.

Activity #1

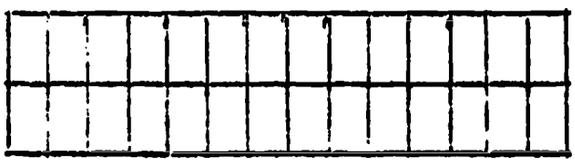
Animals Seen

Find out how many different kinds of animals you can see in five minutes time. Each team should pick a spot for looking. The team should look in every direction from their spot. Count every kind of different animal you see. Put an "X" in the boxes under the right place for every different animal kind which the team sees.

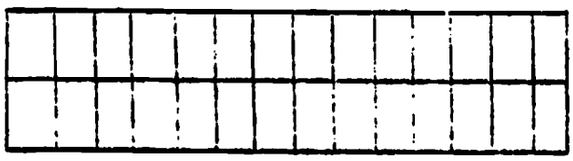
a. Flying Animals



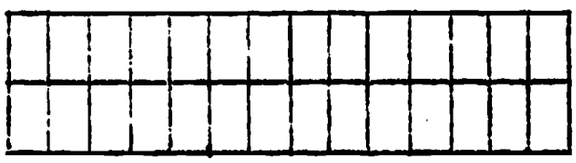
Four legged animals



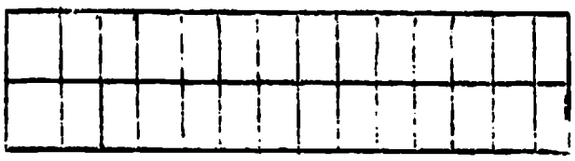
Crawling animals



Hopping animals



Resting animals



b. Write down as many names of these animals as you can. (Students may fill in this section while doing other sections in the winter time.)

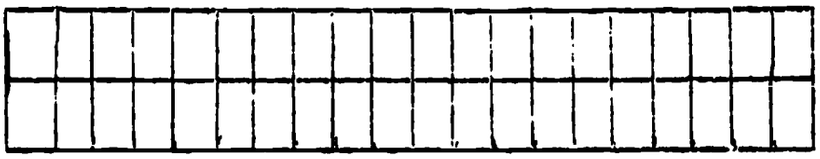
Animal Names

Activity #2

Nest and Hole Study

Each team picks a survey area. Look for all different kinds of nests. Small bird nests, large bird nests, squirrel nests. Measure the height of the bird nests seen near the ground in bushes if possible. Also look for animal holes.

a. Nest count. Put an "X" in a box for each different nest seen.

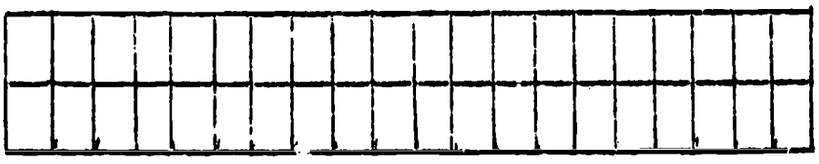


How many nests? _____

How high were the nests you measured? _____ _____ _____ _____

b. Investigate a low nest. Tell what it is made of.

c. Hole count. Look all over on the ground and in the trees for holes. Place an "X" in a box for each kind of hole.



How many kinds of holes? _____

Where were they?

d. What animals live in the holes?

e. Measure the different kinds of holes in the ground. How big are they?

Hole 1 _____ Hole 2 _____ Hole 3 _____

Hole 4 _____ Hole 5 _____ Hole 6 _____

Activity #3

Small Animal Study

Look at the bark of trees for traces of small animals. Look in other places. What do you find in each?

a. Bark of trees

b. Under bark of dead wood

c. Inside dead wood

d. In or next to stumps

e. On the ground

f. In the snow

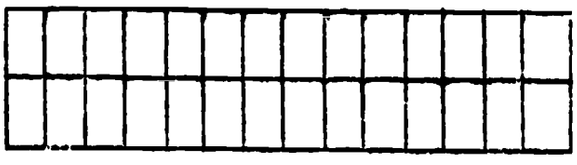
g. Other places

Activity #4

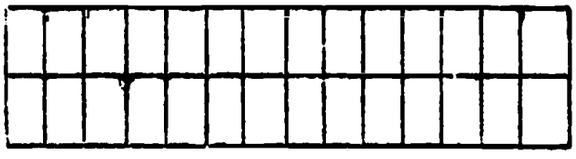
Symphony of Nature

a. Sit for five minutes and listen. How many different animals can you count because of the sound they make? Put an "X" in the box for each sound.

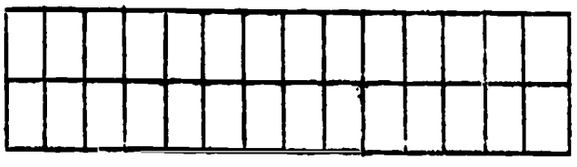
Birds



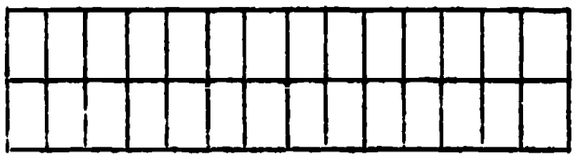
Insects



Four legged animals



Man sounds



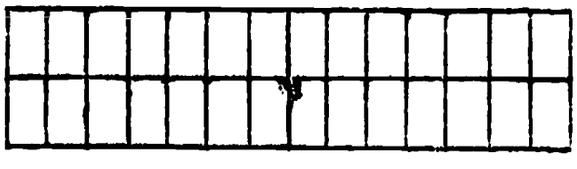
b. Name some of the animal sounds

Activity #5

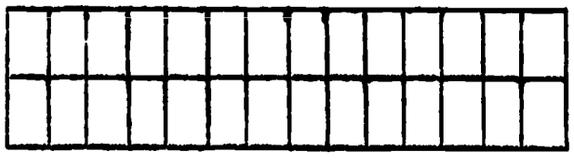
The Traces of Man

Look around for as many signs of man in your animal world. Be careful not to leave any sign of yourself in this place.

Good man signs



Bad man signs



What are some of these signs?

E. S. E. A. Title III - PROJECT I-C-E 59-70-0135-4

Environmental: **Integrated with:**

CONCEPT NO. 9 - Management **SUBJECT** Science - Math - Social Studies

ORIENTATION Soil Management **TOPIC/UNIT** Water/Soil Conservation - City Planning

BEHAVIORAL OBJECTIVES

Cognitive:

Describe factors, that when changed will either increase or decrease the absorbency rate of the soil. Demonstrate the effect of a given change of one of the factors regulating the absorbency rate, on the absorbency rate, through a graph of the data before and after the change occurred. Prepare a graph of absorbency rates of each of the soil types (continued)

Affective:

Demonstrate awareness of differences in absorbency rates of different soils and conditions and investigation of soil types around schools and home.

Skills Used:

1. Carrying out an investigation
   a. constructing equipment
   b. collecting data
   c. organizing
   d. drawing conclusions

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

I. Science and Math

A. Soil Perculation Check
   1. Obtain six tin cans that are the same size. Campbell soup cans are ideal.
   2. Remove the tops and bottoms from five of the cans. Place a mark on each of five, 1/2 inch from a rim.
   3. Press a can 1/2 inch deep (use the mark as a guide) into each following soils:
      a. clay or loam
      b. sandy soil
      c. rich garden soil
      d. lawn where grass grows well
      e. heavily trampled path on a lawn
   4. Use the sixth can to pour a full can of water into each of the others. This activity should be done on the same day so that you can be reasonably sure that the amount of water in each type of soil is, to some extent, the same. Start timing the rate of absorption as soon as you start to pour the water.

(Continued)

Outside or Community:

I. Science and Social Studies

A. Have local plumbing inspector demonstrate a "perk-test" on the school site.

B. Have local contractor or city engineer explain to the students how soil type influences construction of buildings and other structures.

C. Go into the forest.
   1. Divide pupils into groups of 4 or 5. Have them predict what they will find in the top few inches of the forest floor. List their predictions. Stake out an area 2 or 3 feet square. Sift through top 3 inches. Teach litter (identifiable dead things on surface), duff (partially decomposed organic matter compacted), humus (almost completely decomposed non-identifiable organic matter). Group classifies things in one of these 3 categories. Groups report to class gathering their finds.
   2. Have groups feel soil samples. They push and rub moistened soil between thumb and forefinger.

(Continued)

SUGGESTED RESOURCES

Publications:

Books:
Biological Science, Patterns and Processes, Holt, Rinehart and Winston, New York.
The Balance of Nature by Milne, Alfred A. Knopf, N.Y., 1960.
Soil Use & Improvement, Prentice-Hall, Englewood Cliff, New Jersey, 1957.
Man and the Good Earth, Ellis & Amabel, G. P. Putnam's Sons, New York 1959.
Running Water, Stecker, Westwood, Couchman, MacBean, Mine Pub. Inc. 25 Groveland Terrace, Minn. Minn. 55403.

Audio-Visual: (Continued)

Films:
1289 Living Earth, color, EBF, 1949, BAVI.
6889 Man Uses and Changes the Land, color, Coronet, 1967, BAVI.
Materials used:
- samples of soil
- metal dish
- glass cylinders
- heat source

Community:

Have local plumbing inspector demonstrate a "perk-test" on the school site.

CONTINUED OR ADDED LEARNING ACTIVITIES

COGNITIVE: (Continued)

that will indicate the relationship between soil type and absorbency rate.

CLASSROOM: (Continued)

A. 5. Start timing when no more water remains in the can. In some soils you should be prepared for a long wait.
6. Record for each can, the location, the appearance of the soil, one (size of particles, texture, ingredients, etc.) and the time required for the water to be absorbed by the ground. Show the times on a bar graph.
7. Discussion!
Which soil absorbed water the fastest? the slowest? Which soil would produce runoff most easily? What factors seemed to contribute to the rapid absorption of water by soil?

OUTSIDE: (Continued)

C. 2. If it feels gritty. . .sand.
If it feels smooth and slick, not very sticky. . . silt.
If it feels smooth, plastic, very stick . . . clay.
3. Have pupils complete this chart by experimenting to find water holding capacity and looseness of soil. The chart should look like this:

Type of Soil	Water Holding Capacity	Looseness of Soil
Sand	poor	good
Silt	good to excellent	good
Clay	high (plants can't use it in clay)	poor

PUBLICATIONS: (Continued)
Mini-Climates book 120 Ma 3 I-C-E RMC Chapter 5, Soil.
Soil booklet, National Wildlife Federation, I-C-E RMC.

E. S. E. A. Title III — PROJECT I-C-E 59-70-0135-4

Environmental:

Integrated with:

CONCEPT NO. 9 - Management

SUBJECT Mathematics

ORIENTATION Land Use

TOPIC/UNIT Measurement, Scale Models

BEHAVIORAL OBJECTIVES

Cognitive:

Select proper trees, shrubs and grass areas to landscape a given land area, in accordance with the principles of landscaping for the soil type and fertility, moisture and temperatures for the area. Draw the landscaped area, to scale on paper with 1" grids. The scale will be stated. Determine the cost of the landscape plan using available prices for trees,

(Continued)

Affective:

Suggest ways to improve his outdoor environment.

Skills Used:

1. Square area
2. Addition of money
3. Scale model drawing

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

A. Have a landscape artist speak to the groups on trees, shrubs, and space involved in planning. Encourage questions.
B. Give students
   1. Grid with 1" squares
   2. Tree and shrub catalog
   3. Have them form groups
C. Using the equipment above, tell students they have about 1/2 acre of residential land, 104 x 209. They have a small creek or natural spring on their land. They are to plan cost of landscaping the 1/2 acre plot.
D. Put the plan onto the grid in scale-model.
E. When complete, if possible, invite the landscape artist to look at the maps, evaluating the appropriateness and placement of trees.
F. Discuss the plans with the class, taking into account the use of the area, beauty of the area.
G. Discuss actual parks and their aesthetic appeal.

(Continued)

Outside or Community:

A. Visit the tree nursery.
B. Visit a wayside or park.

SUGGESTED RESOURCES

Publications:

Dudley, Ruth H., Our American Trees, New York, Crowell, 1956.
Bulla, Clyde R., A Tree Is a Plant, Crowell, 1962.
Buelcher, Jean M. and R. H. Naoilles, A Tree Is Born, New York Sterling, 1960.
Udry, Janice M., A Tree Is Nice, Harper and Row, 1956.

Audio–Visual:

3873 "Tree Portrait" BAVI.
"Man and His Environment"
Simulation Games from I-C-E, RMC.

Community:

Landscaper
County Agent
Tree and Shrub Catalog
Stark Brothers
Louisiana
Missouri 63353

CONTINUED OR ADDED LEARNING ACTIVITIES

COGNITIVE: (Continued)

shrubs, sodding, grass seeding, and labor and equipment charges.

CLASSROOM: (Continued)

H. Use the Simulation Game - Man and His Environment from I-C-E, RMC.

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 9 - Management

SUBJECT Social Studies

ORIENTATION Land Use

TOPIC/UNIT U. S. Social Studies (North Central States)

BEHAVIORAL OBJECTIVES

Cognitive:

Describe at least 3 examples of causes for change in a city environment from its early beginnings to the present day in answer to the question: "What has caused changes in a city's environment?"

Affective:

Voluntarily organize and design a bulletin board display showing several changes that have taken place in their city from the time it was conceived to the present day.

Skills Used:

1. Building models
2. Brainstorming
3. Evaluating
4. Comparing

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Show movie, Chicago: Midland Metropolis.
B. Read about the early beginnings of Chicago.
C. Discuss this early settlement:
   1. The land cover
   2. The buildings and roads
   3. Occupations
D. Build models of "Old" Chicago and "New" Chicago (present day) showing the development, especially of roadways and buildings.
E. Brainstorm reasons for the great changes in the Chicago environment. Make a list of the suggestions.
F. Using the list compiled above as a basis for library research, evaluate and decide which suggestions are true.
G. Revise the list of suggestions from brainstorming, using library research findings.

Outside or Community:

A. Visit city library and read about the early history of your city.
B. Ask children to search for pictures of the early settlement of their city. (Parents, grandparents or other relatives.)
C. Then have the class discuss the comparison of their city "then" and "now."

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: Books: Cities and Metropolitan Areas, Samuel L. Arbital, Creative Educational Society, 1967, (301.36). Population Growth and Land Use, Colin Clark, St. Martin, 1967, (338.19). **Audio-Visual:** Chicago: Midland Metropolis, 5978 - Bureau of Audio-Visual Instruction, 1327 University Avenue P. O. Box 2093, Madison, Wis. 53701. **Community:** Business area of the city. Relatives	

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO. 9 - Management **SUBJECT** Language Arts

ORIENTATION Natural Resources **TOPIC/UNIT** Speech Writing and Presentation

BEHAVIORAL OBJECTIVES

Cognitive:

Writing and present a speech for a radio presentation that acknowledge his part in managing the environment.

Affective:

Promote individual and community involvement in environmental problems by presenting a radio broadcast.

Skills Used:

1. Speech writing
2. Tape presentation
3. Poetry writing (to song)
4. Feeling of pride in their community.

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Teacher and students plan what can be presented as a radio environment program:
   1. Local problem areas
   2. Ways children of all ages can get involved
   3. Community involvement
      a. Each student writes his view of one of the above topics to be used as a speech.
      b. Speeches are taped (to prevent individual favoritism) and then listened to by class to be used as the radio broadcast.
      c. Students practice presentations on tapes.
      d. Possibly, the children could write words to a familiar tune to open and close the program.

Outside or Community:

Have some of the students contact the radio station to see if they can come to school or if they may go to the studio.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: 30 Basic Speech Experiences, Clark Publishing Company. **Audio-Visual:** **Community:** Local radio announcer	

Environmental: **Integrated with:**

CONCEPT NO. 10 - Economic Planning **SUBJECT** Language Arts

ORIENTATION Resource Conservation **TOPIC/UNIT** Writing an Account, Keeping a Log

BEHAVIORAL OBJECTIVES

Cognitive:

Describe changes that have occurred and predict changes that will probably occur in a tree, based on the information recorded about the growth and characteristics of the tree over a period of time.

Affective:

Compose a writing that demonstrates the loss to the environment when a healthy tree is cut down, that can be shared with others in the class.

Skills Used:

1. Discussion
2. Writing
3. Making comparisons
4. Keeping a log
5. Observation

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. 1. With the aid of Park and Recreation Department of the City, or tree surgeon, teacher would find out when and where a tree in the city is to be taken down.
2. Take class to tree site and do a creative writing experience using the senses--sight, sound, smell, touch, and taste.
3. Do not inform class that tree is to be cut down.
4. Return to tree site after tree has been removed. The child again reacts to the site in creative writing.

Outside or Community:

Adopt a Tree

Each pupil "adopts" a tree on the school site (or very near).

Pupils do research on the tree. Records are kept in a booklet.

At certain times, maybe once a week, the height, circumference of tree, color of leaves, number of limbs, and other observations are recorded with the date.

Also, four drawings of the tree, one for each season, is put in the notebook.

A tag is placed on the tree, with name of tree and the child who adopted it.

See p. 74 for way to determine height of tree, circumference and diameter.

Bark texture can be pictured by bark rubbings. Pupil uses a piece of paper and a wax crayon to make bark rubbings of bark. Is bark all the same color?

During early spring, select one branch of your tree to study. Record changes until branch is fully leafed out. "Did the branch produce flowers before or after the leaves first appeared?"

(Continued)

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: Conservation, Nat'l Wildlife College of Agriculture bulletins, County Forester Office. **Audio-Visual:** Film: Brown County Library, 8 min., Forest Murmurs, color. Filmstrip: Brown County Library, Enemies of the Forest, 634.9. Forest Conservation, 634.9. Our Forests and What They Mean to Us, 634.9. **Community:**	OUTSIDE: (Continued) "How long did the blossoms remain on the branch?" "How long did a single blossom remain in bloom?" "How does this branch differ in its flowering habits from trees studied by other students?"

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 10 - Economic Planning

SUBJECT Social Studies, Language

ORIENTATION Technology

TOPIC/UNIT Career Choice - Conducting an Interview

BEHAVIORAL OBJECTIVES

Cognitive:

Verbally give researched information of the consequences for environment for a given career obtained by using the guide questions listed in this lesson.

Affective:

Investigate and find out ways that a given career or profession may have harmful consequences for the environment. Express a desire to enter or remain out of a given field of employment because of its assistance; harmful consequences on the environment. Accept the entering of an employment field even though it may (Continued)

Skills Used:

1. Interviewing skills
2. Evaluating
3. Research
4. Drawing conclusions

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Student Study Guide to Career Information (on reverse side).
B. Divide class into groups of two according to career choice.
C. Using suggested resources, complete the guide:
   1. Colleges
   2. Technical schools
   3. Visits to classroom by professionals
   4. Interview people
   5. Career guidance offices
   6. Employment agencies
   7. Library
D. (Language lesson to determine good interview techniques.)
E. Groups of two interview for the class.
F. Class members given Listeners' Guide (on reverse side) to collect data on interviews.

(Continued)

Outside or Community:

A. Invite parents and have them explain occupation and let students question and interview.
B. Panel game of "What's My Line?"
C. Field trips to various career places.

SUGGESTED RESOURCES

Publications:

Catalogs from various universities and colleges.
Pamphlets from Wisconsin Employment Service.

Audio-Visual:

Films:
Forest Ranger, 2786, Bureau of Audio-Visual Instruction, P. O. Box 2093, Madison, Wisconsin 53701
How a Scientist Works, 5368, Educational Horizons, Ibid
"What Do Ecologists Do?" I-C-E film library.

Community:

Land development area.
Persons involved in the various careers mentioned in the learning experiences.
Various institutions.
Wisconsin Employment Service

CONTINUED OR ADDED LEARNING ACTIVITIES

AFFECTIVE: (Continued)

result in the changing of the present environment. (Homebuilding, road construction, etc.)

CLASSROOM: (Continued)

STUDENT STUDY GUIDE TO CAREER INFORMATION - PART I

Career Information Guide Name_____
Job Title_____

1. What are the qualifications for this job?
2. What materials & equipment will you work with?
3. What services will you provide?
4. What responsibilities will you have toward people?
5. What responsibilities will you have toward the environment and the resources with which you will work?
6. What aspects of this career appeal to you most? Why? What things about it make you feel good?

LISTENERS' GUIDE TO CAREER INTERVIEWS - PART II

Listener_____
Students in Interview_____
_____

Observations

List ways this career is responsible to people in our environment.

1._____
2._____
3._____
4._____

List ways this career is responsible to resources in our environment.

1._____ 3._____
2._____ 4._____

Did this interview give you the necessary information to fill in the above checklist? Yes_____ No_____

Environmental:

Integrated with:

CONCEPT NO. 10 - Economic Planning

SUBJECT Mathematics

ORIENTATION Short-Long Term Factors

TOPIC/UNIT Decimals - Problem Solving

BEHAVIORAL OBJECTIVES

Cognitive:

Solve simple decimal and percentage arithmetic word problems that include economic factors involving pollution. Child observes building landmarks, etc. noting observations of environmental deterioration. Compare the effects of natural environmental deterioration with that of man's environment deterioration in: a. rate of change; b. identifying characteristics.

Affective:

Demonstrate the appreciation for the above concept from working with problems dealing with the monetary aspect of environmental losses. Observe objects that can be used to predict the environmental change that takes place over a period of time and predict how long the object will remain at a given height, depth, color, etc. (building, landmark, tombstone).

Skills Used:

1. Problem solving
2. Reasoning; observing
3. Computing; analyzing

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. We've used our waterways as dumping grounds for more than two centuries. The villains of the pollution of our waterways are industry 65%, municipalities 20% and agriculture 15%.
   1. If only 32 states have fully approved water quality standards, how many do not? What is the percentage ratio of those that do to those that do not?
   2. It will take a 5-year investment of $42 billion to clean up water. Over half is industry's responsibility. If industries' shares are 3.2, 2.0, 4.0, 6.6, 1.0, and 7.7 billion dollars for various abatement needs, what is the total of industry's financial responsibility?
   3. What is the municipal financial responsibility?
   4. At present North Americans are removing fresh water from underground sources twice as fast as it can be replaced.

(Continued)

Outside or Community:

A. Take a field trip to the nearest "large city." Observe the effects of various acids in the atmosphere that are damaging buildings, landmarks, and works of art. Can old landmarks and buildings be restored or must they be replaced? Some of these buildings are, in reality, irreplaceable.

B. Go on the school grounds or area not far from an industrial site that has plant life growing on it. Observe the upper side of the leaves for evidence of an accumulation of pollutants. The stomata are tiny openings on the underside of the leaves that afford the plant the ability to breathe.

SUGGESTED RESOURCES

Publications:

The Only Earth We Have,
Laurence Pringle, MacMillan Co.
866 Third Avenue, New York City 10022
$4.50, hard cover, $1.60 paperback.
Schneider, Gerald, 1968 Conservation Teaching in the City,
New York State Conservation Dept.
(Resource Center)

Audio–Visual:

No. 250 Men at Bay, I-C-E RMC
BAVI, 0678 - "Air Pollution"
11 minutes $4.00 BAVI
Journal 1968.

Community:

City Planner
Historical Society

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM: (Continued)

It is estimated that Americans will need 700 billion gallons of underground water in 1980 (per year). If only 650 billion gallons will be available, what is the ratio of available water to that which will be needed?

E. S. E. A. Title III – PROJECT I–C–E 69–70–0135–4

Environmental: **Integrated with:**

CONCEPT NO 11 - Individual Acts **SUBJECT** Social Studies, Language Arts

ORIENTATION Pollution **TOPIC/UNIT** TV - Radio Program Production - Local History

BEHAVIORAL OBJECTIVES

Cognitive:

Compare the roles of the individual company and community in the changes that have occurred in a river's:
- a. path
- b. pollution level
- c. navigability

Affective:

Participate in a radio or TV production that will include acts of individuals, communities, or companies that have caused a change in a river's:
- a. path
- b. pollution level
- c. navigability

Skills Used:
1. Script construction
2. Play presentation
3. Tape recording
4. Role playing
5. Research and observation

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Radio Program - You Are There - The River.
1. Narrator - Introduce program by description of geographical location of Fox (or any other river).
2. River of Yesteryear
Cast: Indian - research how the Indian lived and used river.
Explorer - Marquette and Joliet - reasons for exploration and where they went.
Fur trader - why he came and where he went.
Early settler - an industrialist and farmer; why they came.
3. Commercials: Interject at anytime to sell products which cause water pollution.
4. The River Today
   a. full-time resident - septic tank run off right into river.
   b. Cottager - boats causing oil spill.
   c. Industrialist - dumping of industrial waste.

(Continued)

Outside or Community:

Either visit or talk to resource person describing industrial waste.

Resource person or visit to municipal sewage disposal system as relates to river.

Plumber to describe septic system and proper drainage.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

Kimberly-Clark Corp.
"Where Do We Stand on Pollution?" '70.

Audio-Visual:

The Stream: ACI Films, Inc. 15 min. sd. col. 16 mm. 5-12 available from I-C-E.
Men at Bay: film, King Screen Production, 1971, 25 min. sd. col. 16 mm. 5-12 available from I-C-E.
The Gifts: U.S. Dept. of Interior, 25 min. sd. col. 16 mm. grades 7-12 available from I-C-E.

Community:

CLASSROOM: (Continued)

A. 4. d. Anybody who litters.
e. Housewife - surface runoff (drain water from house piped to runoff in river).
f. Farmer - fertilizer, insecticide runoff to river.
g. Mayor - sewage disposal.

Must interject to listening audience continually how this is duplicated up and down The Piver.

Environmental:

Integrated with:

CONCEPT NO. 11 - Individual Acts

SUBJECT Language Arts, Social Studies, Art, Music

ORIENTATION Environmental Alterations

TOPIC/UNIT Script Writing, Urban Aesthetics, Photography and Design

BEHAVIORAL OBJECTIVES

Cognitive:

Describe examples of several alterations in his community that are due to duplication of an individual act which was seemingly insignificant in itself.

Affective:

Present examples of the consequences of duplicating seemingly insignificant individual acts of pollution. Participate in a multi-media presentation which illustrates the alterations of the environment that have been due to the acts of individuals, companies, and/or communities.

Skills Used:

1. Script writing and planning
2. Tape recording
3. Slide-tape synchronization
4. Photography
5. Designing title slides

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Divide class into groups of four. Each group should have a camera and film suitable for slides and 20 exposures.
B. Take slides where there is evidence of an alteration due to duplicated individual acts within a specific area.
C. Suggestions for photographic study:
   1. Lawn breakdown by paths from vehicles and/or pedestrians.
   2. Instances of misuse of many automobiles.
   3. Littering
   4. Graffiti (washroom writing)
   5. Over abundance of signs and billboards.
   6. Lunchroom.
   7. The bus.
   8. Waste disposal.
   9. Studded tires.
   10. Investigate parking lot and playground
   11. Fingerprints throughout building.
   12. etc.
D. Organize slides for a multi-media presentation:
   Write script
   Record script cassette
   Synchronize music
   Design title and credit slides

(Continued)

Outside or Community:

Integrate with Art Lesson on Group Design in Individual Alterations for Concept #11.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: "A Place to Live" National Audubon Society, I-C-E. **Audio-Visual:** **Community:**	CLASSROOM: (Continued) E. Present to an audience. Hint: Discount stores such as K-Mart have color slide film at very reasonable costs. (About $2.25 per roll of 20 - includes processing)

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 11 - Individual Acts

SUBJECT Art

ORIENTATION Individual Alterations

TOPIC/UNIT Group Design

BEHAVIORAL OBJECTIVES

Cognitive:

Organizes individual pieces to make a completed project which adheres to the rules of positive-negative space relationships of a design.

Affective:

Accepts responsibility of individual to work together with others by assisting others in the completion of an art project assigned to the group.

Skills Used:

1. Portrait drawing
2. Ceramic techniques
3. Mural development
4. Group planning and cooperation
5. Awareness
6. Observation

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Lesson on portraits. Each student draws a silhouette of another member of the class. Make composition on bulletin board to show filling of space (positive-negative).

B. Each student makes individual ceramic tiles. When put together as a mosaic, the tiles are integrated or composed to make an interesting mural.

Outside or Community:

A. Have students collect paper from home and community. Plan field trip to a paper company. Have the paper recycled for use as drawing paper in the classroom.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: "Ecological Ceramics" C. Heiple, Arts and Activities, 69:29-31, Mr. "It Just Happened: Clay Modeling" H. C. Warburton, Arts and Activities, 69:22-4 Mr '71. A Dictionary of Art Terms and Techniques, Ralph Mayer, Thomas Y. Crowel Co., New York. **Audio-Visual:** **Community:**	

E. S. E. A. Title III – PROJECT I-C-E 59-70-0135-4

Environmental:

CONCEPT NO. 12 - Stewardship

ORIENTATION Wetlands

Integrated with:

SUBJECT Social Studies, Language Arts, Science, Math

TOPIC/UNIT Local Gov't., Debate, Water Cons., Problem Solving

BEHAVIORAL OBJECTIVES

Cognitive:

Predict the fate of the wetland areas and the loss of a habitat for animals during the next 10 years under the present attitude toward gaining more cropland by draining wetlands.

Affective:

Argues that the changes that an individual, company or community can make to an environment should be limited and/or controlled by some governmental coordinating agency to reduce the destruction to an environment.

Skills Used:

1. Research
2. Debate (L.A.)
3. Computation (Math)
4. Parlimentary Procedure

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

A. Role Play
Problem: loss of wetlands due to reclaiming land for crop production.
1. Group One:
Farmers - draining a portion of his land which is marsh for crop use:
Research farmers' reasons for using these guidelines.
   a. Figure yield of corn per acre of re-claimed land.
   b. Figure tax on unuseable land.
   c. Marsh is breeding place for organisms which harm crops (investigate).
   d. Trespassers using marsh as hunting groups.
   e. Submit arguments to County Board.
2. Group Two:
Environmentalists show concern for loss of wetlands.
Research:
   a. A marsh community.
   b. Submit value of marshlands to County Board to argue against loss of wetlands.

(Continued)

Outside or Community:

IF POSSIBLE!! AND PRACTICAL

VISIT

Farm
Marsh
Town Board Meeting

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

Environmental Education Concepts and Teaching Materials, Cook Gr. 4-6.
Interaction of Man and the Biosphere, Rand McNally and Company, Chicago.

Audio-Visual:

Films:
5367 Conserving Our Wildlife Today, color, Coronet, 1962, BAVI.
1974 Man's Problem, Part II Living Water Series, Color, 19 min. EBF, 1953, BAVI.
#390 Cry of the Marsh, I-C-E CESA #9 Film Library, Green Bay.

Community:

CLASSROOM: (Continued)

A. 3. Group Three:
Township Board to decide after hearing arguments what to do with land.
a. Research and organize for a Town Board Meeting.
b. Hear and decide issue.

B. Show film: "Cry of the Marsh."
C. Poll class to decide on the fate of the wetlands.

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 12 - Stewardship

SUBJECT Language Arts, Social Studies, Math

ORIENTATION Ethics of Aesthetics

TOPIC/UNIT Newspaper Article Writing, Urban Study, Averaging, Writing Business Letters.

a "What Can I do?"

BEHAVIORAL OBJECTIVES

Cognitive:

Write a newspaper article using acceptable reporting techniques reporting facts and observations learned during the Stewardship Urban Study.

Affective:

Participate in a program to determine the amount and types of property stewardship practiced by the persons in a giver area.

Skills Used:

1. Newspaper Article Writing
2. Organizing and Collecting Data
3. Writing Business Letters

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Teacher establish good newspaper reporting skills.
B. Student will gather evidence of good stewardship practices of property owners on a city street, one block long, using the Stewardship Urban Study Guide (on reverse side).
C. After returning to class, the student will write, using good reporting techniques, an article reporting facts and observations learned from Study Guide.
D. Write business letters concerning ways of conserving our resources, See p. 136 for addresses. Report replies to class. Class can then decide on one project.
E. Collect newspaper articles on conservation for 10 days. What conclusions can you make? Is the local newspaper conservation minded? What area was of most concern, air pollution? water? solid waste? Were practical suggestions being put into practice?

(Continued)

Outside or Community:

SUGGESTED RESOURCES

Publications:

Local Newspaper - and/or reporters.
"A Place To Live" National Audubon Society booklet of urban studies for elementary grades.
"Man's Habitat - The City" Environment of Science Center, Golden Valley, Minn. I-C-E.

Audio-Visual:

Ecolab Kit, 1971 Learning Concepts by Johnson & Mann, I-C-E.
Urban Ecology 6 filmstrips, Eye Gate (I-C-E FS St. 3)

Community:

Consult with:
County Agent
Park and Recreation Department
City Engineer's Office

CONTINUED OR ADDED LEARNING ACTIVITIES

CLASSROOM: (Continued)

STEWARDSHIP URBAN STUDY GUIDE

Residence	Lawn & Shrub Care	Sidewalk clear of Obstructions	Property Maintenance Tools out of view (lawnmower, rake, broom, etc.)	Recreational vehicles parked appropriately	Trees & bushes provide no obstruction to traffic (cars, ped.)	No objectionable sounds	Good pet care	Total	Average	
A	3	2	3	1	2	3	1	15	2.2	
Total										

E. S. E. A. Title III – PROJECT I–C–E 59–70–0135–4

Environmental:

Integrated with:

CONCEPT NO. 12 - Stewardship

SUBJECT Mathematics and Social Studies

ORIENTATION Conservation

TOPIC/UNIT Computation

BEHAVIORAL OBJECTIVES

Cognitive:

Compute amounts and costs of board feet used and wasted for a given object given a list of materials (dimensions and types) purchased.

Affective:

Appreciate the monetary value of an average tree for building purposes at the present and in the future by making comparisons with other known values such as equivalent to average hours of work, etc. Will attempt to purchase lumber and materials and plan cutting and construction of a given object (Home, box, etc.) (Continued)

Skills Used:

1. Multiplying
2. Observing
3. Listing

STUDENT–CENTERED LEARNING ACTIVITIES

In-Class:

A. Given the fact that an average family dwelling unit requires about 13,000 board feet of lumber.
   1. Find the board foot requirement if 10 new homes are built.
   2. Find board feet destroyed if 20 homes are demolished to clear a path for a highway.

B. Find the cost of the board feet destroyed in number 2 above.

C. List the effects of waste of board feet of lumber on lumber availability for future generations.

Outside or Community:

A. Invite in a member of a demolition team to discuss difficulties of tearing down and rebuilding homes in the path of proposed building projects.

B. Visit a lumber yard to see different kinds and grades of lumber.

C. Visit a sawmill and note the waste caused in manufacturing boards.

D. Talk to local carpenter and learn how he conserves materials.

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

Trail Guide Berlin
Outdoor Education Center
I-C-E RMC Vertical file.

Audio-Visual:

6448 Lumberman, color,
15 min. $5.50 BAVI, 1965.
Let's Build a House, Churchill
Films, 6671 Sunset Boulevard,
Los Angeles.

Community:

Sawmill
Lumber Yard
House Construction
Road Building Sites

AFFECTIVE: (Continued)

that will allow the object to be constructed with the least waste.

E. S. E. A. Title III -- PROJECT I-C-E 59-70-0135-4

Environmental:

Integrated with:

CONCEPT NO. 12 - Stewardship

SUBJECT Mathematics and Science

ORIENTATION Waste Disposal

TOPIC/UNIT Numeration (Multiplication)

BEHAVIORAL OBJECTIVES

Cognitive:

Compute the amount of waste-paper. bottles or cans, etc., which could be found in a given area based on the data of that collected in the environmental cleaning hike.

Affective:

Criticize actions of their own and their families. Respon favorably to the beauty of a litter-free landscape in verbal statements when comparing it to the situation before the cleanup hike.

Skills Used:

1. Planning
2. Observation
3. Collecting
4. Organizing
5. Computing
6. Criticizing

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

A. The class will select an area of roadside which they feel needs to be cleaned up and make preparations for an environmental cleaning hike.
   1. Bring bags in which to place various types of litter.
   2. Volunteer to be on a group which picks up one type of litter, (paper, cans, etc.).

B. The class will determine what length of roadside they will clean up.
   1. Determine how it will be measured.

C. Compute the miles of roadside in their township, county or state.

D. Based on the amount of litter picked up in outside activity, compute or multiply the tons of litter in township, county or state. Write to County Road Commissioner for mileage covered by County crews. Use town - County - road maps to get own mileage, or State offices may have figures on state highway miles.

Outside or Community:

A. Tour a measured or known length of roadside collecting various classes of waste or litter, (paper, cans, etc.) which can be weighed.
   1. Record the amount of each class of waste.
   2. At this rate per mile by multiplication, compute amount found in township, county or state.
   3. Children living in village or city could find cost of cleanup in parks, streets, etc.
   4. As a class project, organize and carry out a community "cleanup and spruce-up" campaign.

B. In a vacant lot:
   1. Note the kinds of litter.
   2. Note the ways in which litter changes the environment:
      a. blocks light
      b. increases moisture
      c. makes area unsightly
      d. makes cleanup costly
      e. introduces different materials into the soil
   3. "What would the lot be like without litter?"

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES

Publications:

National Wildlife Federation
EQ Index #VF at I-C-E RMC.
God's Own Junkyard,
Borgstrom, George.
How to Kill a Golden State,
Bronseon, Wm.

Audio-Visual:

6878 Land Betrayed, color,
$3.75, 10 minutes (Riggins)
1967 BAVI.

Community:

Town Chairman
Road Commissioner

E. S. E. A. Title III – PROJECT I-C-E 59-70-0135-4

Environmental:

Integrated with:

CONCEPT NO. 12 - Stewardship

SUBJECT Physical Education and Science

ORIENTATION Respecting Property Rights and Being Aware of Beauty

TOPIC/UNIT Volleyball and Lead-Up Games

BEHAVIORAL OBJECTIVES

Cognitive:

List at least 2 reasons why they should respect other people's property. Evaluate the actions of a particular person or group in a specified situation as to whether or not he/they respected the other person's property if no sign is posted; if a sign is present (no trespassing, etc.).

Affective:

Respect the property and rights of other people by choosing a path or other action which does not interfere with the rights of others when presented with a situation in which a choice is given.

Skills Used:

1. Catching and throwing
2. Playing a position
3. Volleying
4. Serving
5. Teamwork
6. Sportsmanship

STUDENT-CENTERED LEARNING ACTIVITIES

In-Class:

I. Physical Education

A. Volleyball
   1. Assign each player to a space. Stress playing own position.

NOTE: Level of play depends on skill level of students.

B. Discussion: Student-centered - teacher-directed.
   1. Why must we play our own space?
   2. What would happen if we went all over the court?
   3. Can we say that this space is a private piece of land?
   4. What about private property - should we trespass?
   5. What about other people's property - should we mark on it or destroy it?
   6. When we go to a park, how should we leave it?

Outside or Community:

I. Physical Education

A. Have a park manager relate the expense involved in repairing defaced facilities, stating also why people should respect areas designated for swimming, picnicking, camping, etc.

B. Have janitor talk to class and point out the expense of repairing damage done during the year.

II. Science

A. Take the pupils to a spot and give them time to observe beauty quietly. Remind them that they stand in the shade of trees they did not plant, read books they did not write, etc.
   "What is your responsibility for conserving beauty?"
   "What can I do?"

SUGGESTED RESOURCES	CONTINUED OR ADDED LEARNING ACTIVITIES
Publications: Environmental Education Concepts and Teaching Materials, Cook, Gr. 4-6. Interaction of Man and the Biosphere, Rand McNally and Co., Chicago, Illinois **Audio-Visual:** **Community:**	

APPENDIX

CAN BE USED WITH CONCEPTS 2 AND 3

CROWS AND CRANES

Equal number of players in two straight lines three feet apart. One team is "Crows" the other team is "Cranes." When teacher calls "Crows" they run to their goal line and Cranes try to tag them. If he calls "Cranes," Cranes run to their goal. Any player caught goes to opposite team.

CAN BE USED WITH CONCEPT 7

LONG BASE

Equipment: one playground ball, ball diamond; second base is only base used.

One team is up, the other team is spaced on the playing field. Ball is thrown into field. Runner attempts to run around base and home before being hit by the ball. Once a fielder has the ball, he cannot move, but must either hit the runner or pass the ball to another player. There are three outs to an inning.

CAN BE USED WITH CONCEPTS 7 AND 9

INDIVIDUAL KICKBALL

Two equal teams. Team one is up to make points, while team two players are in the field. Player kicks ball out into field and attempts to run as many bases as he can before his opponent can bring the ball to home base. One point is scored for each base. A home run scores five points.

CAN BE USED WITH CONCEPTS 6 AND 10

GERMAN BOTBALL

Equipment - 2 plastic bats, one soft 8" playground ball.

Ball and bats are placed in center of playing area. Teams are lined up on each goal line. Each player on each team is given a number. When a number is called, the two players run to center and try to hit the ball over opponent's goal line. Team members cannot guard the goal. Point is scored when ball crosses goal line.

CAN BE USED WITH CONCEPTS 7 AND 11

HOT ROD

Form a circle. Count off by five. Each car has his own garage. Teacher calls a number; all cars with that number run counterclockwise around the circle once back to their own garage. Last one to get back has a wrecked car so is out of the race. Player sits down in his "garage." Game continues until one car of each number is left.

Sport Fishing Institute
608 - 13th Street, N.W.
Washington, D.C. 20005

American Petroleum Institute
1271 Avenue of the Americas
New York, New York 10020

Fox Valley Council of Governments
12th Floor Zuelke Building
Appleton, Wisconsin 54911

Thilmany Pulp and Paper Company
Kaukauna, Wisconsin 54130

Kimberly Clark Paper Company
Kimberly, Wisconsin 54136

Committee on Resources and Man
National Academy of Sciences
W. H. Freeman and Company
San Francisco, California

U.S.D.A. - Forest Service
633 W. Wisconsin Avenue
Milwaukee, Wisconsin

State Conservationist
3010 East Washington Avenue
Madison, Wisconsin

U.S. Department of Agriculture
Washington, D.C. 20250

American Forestry Association
919 - 17th Street, N.W.
Washington, D.C. 20006

National Audubon Society
1130 Fifth Avenue
New York, New York 10028

National Parks Association
1300 New Hampshire Avenue, N.W.
Washington, D.C. 20036

National Wildlife Federation
1412 - 16th Street, N.W.
Washington, D.C. 20036
Sample copy of No. 79007

Nature Conservancy
1522 K Street, N.W.
Washington, D.C. 20005

Federal Water Pollution Control
Administration
Office of Information
U. S. Dept. of Interior
Washington, D.C. 20242

Sierra Club
1050 Mills Tower
San Francisco, California 94104

The Wilderness Society
729 - 15th Street, N.W.
Washington, D.C. 20005

A Program for Snowmobiling in Wisconsin
DNR
Bureau of Commercial Recreation
Box 405
Madison, Wisconsin 53701

Wisconsin Environmental Decade
Box 117
Racine, Wisconsin 53403

Environmental Protection Agency Office
of Public Affairs
1 North Wacker Drive
Chicago, Illinois 60606

U. S. Environmental Protection Agency
Office of Public Affairs
Washington, D.C. 50460
"Don't Leave It All to the Experts"
"Research and Monitoring"

American Forest Institute
1835 K Street, N.W.
Washington, D.C. 20006

Bureau of Outdoor Recreation
Division of Information
U. S. Department of the Interior
Washington, D.C. 20240

Bureau of Sport Fisheries and Wildlife
Office of Conservation Education
U.S. Department of the Interior
Washington, D.C. 20240

Consumer Protection and Environmental
Health Service
Office of Public Affairs
U.S. Dept. of Health, Education & Welfare
Washington, D.C. 20204

National Air Pollution Control Admin.
Office of Education & Information
U. S. Dept. of Health, Education & Welfare
801 North Randolph Street
Arlington, Virginia 22203