DOCUMENT RESUME

ED 079 157 SE 016 545

AUTHOR	Warpinski, Robert
TITLE	A Supplementary Program for Environmental Education, Mathematics, Grade 5-6.
INSTITUTION	Project I-C-E, Green Bay, Wis.
SPONS AGENCY	Bureau of Elementary and Secondary Education (DHEW/OE), Washington, D.C.
PUB DATE	72
NOTE	75p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Behavioral Objectives; *Elementary Grades; *Environmental Education; Fundamental Concepts; Grade 5; Grade 6; Instructional Materials; Interdisciplinary Approach; Learning Activities; *Lesson Plans; *Mathematics; *Teaching Guides
IDENTIFIERS	ESEA Title III

ABSTRACT

Presented in these teacher's guides for grades five and six are lesson plans and ideas for integrating mathematics and environmental education. Each lesson originates with a fundamental concept pertaining to the environment and states, in addition, its discipline area, subject area, and problem orientation. Following this, behavioral objectives and suggested learning experiences are outlined. Behavioral objectives include cognitive and affective objectives and skills to be learned, while learning experiences list student-centered in-class activities and outside resource and community activities. Space is provided for teachers to note resource and reference materials--publications, audio-visual aids, and community resources. The guides are supplementary in nature and the lessons or episodes are designed to be placed in existing course content at appropriate times. This work was prepared under an ESEA Title III contract for Project I-C-E (Instruction-Curriculum-Environment). (BL)

Project I - C - E INSTRUCTION - CURRICULUM - ENVIRONMENT

A SUPPLEMENTARY PROGRAM FOR ENVIRONMENTAL EDUCATION

DISCIPLINE AREA Mathematics GRADE 5

Produced under Title III E.S.E.A.
PROJECT I-C-E
Serving Schools in CESA's 3-8-9
1927 Main Street
Green Bay, Wisconsin 54301
(414) 432-4338
(after Dec. 1, 1972 - 468-7464)

Robert Warpinski, Director
Robert Kellner, Asst. Dire
George Howlett, EE Special

- E INSTRUCTION - CURRICULUM - ENVIRONMENT

RY PROGRAM FOR ENVIRONMENTAL EDUCATION

EA Mathematics GRADE 5

r Title III E.S.E.A.

ls in CESA's 3-8-9
eet
sconsin 54301
8
, 1972 - 468-7464)

Robert Warpinski, Director
Robert Kellner, Asst. Director
George Howlett, EE Specialist

PREFACE

"Oikus" for house is the Greek origin of the term "ecology". studies our house--whatever or wherever it may be. Like an umbi expand or contract to fit many ranges--natural and man-made. W environments, our many "houses" if we omit rancor and cite long complexities. Our "oikus" uses the insights of all subjects. multidisciplinary program like ours necessarily results. Also, a long time, our program ranges K thru 12. The environment mir values. These values have their origin in the "oikus" of our c minds. Let us become masters of our house by replacing the Gre with "Know thyself and thine house."

1. Written and designed by your fellow teachers, this guide is to fit appropriately into existing, logical course content.
2. Each page or episode offers suggestions. Knowing your stude to adapt or adopt. Limitless chances are here for your expe Many episodes are self contained, some open-minded, still ot developed over a few days.
3. Try these episodes, but please pre-plan. Why? Simply, no g and no curriculum will work unless viewed in the context of
4. React to this guide with scratch ideas and notes on the epis
5. After using an episode, fill out the attached evaluation for duplicate, or request more of these forms. Send them singly We sincerely want your reactions or suggestions--negative an evaluations are the key in telling us "what works" and in ai the guides.

TERMS AND ABBREVIATIONS

ICE RMC is Project ICE Resource Materials Center serving all school districts in CESA 3, 8, and 9. Check the Project ICE Bi resources. Our address and phone number is on this guide's cov or call us for any materials or help.

BAVI is Bureau of Audio Visual Instruction, 1327 University A Madison, Wisconsin 53701 (Phone: 608-262-1644).

Cognitive means a measurable mental skill, ability, or proces

Affective refers to student attitudes, values, and feelings.

PREFACE

s" for house is the Greek origin of the term "ecology". Environmental education
our house--whatever or wherever it may be. Like an umbrella, our house can
or contract to fit many ranges--natural and man-made. We can add quality to our
ments, our many "houses" if we omit rancor and cite long range gains, costs, and
ities. Our "oikus" uses the insights of all subjects. Thus, a rational, positive,
sciplinary program like ours necessarily results. Also, since attitudes grow over
time, our program ranges K thru 12. The environment mirrors our attitudes or
These values have their origin in the "oikus" of our collective and individual
Let us become masters of our house by replacing the Greek adage of "Know thyself"
now thyself and thine house."

ten and designed by your fellow teachers, this guide is supplementary in nature--
it appropriately into existing, logical course content.
page or episode offers suggestions. Knowing your students best, you decide what
dapt or adopt. Limitless chances are here for your experimentation and usage.
episodes are self contained, some open-minded, still others can be changed or
loped over a few days.
these episodes, but please pre-plan. Why? Simply, no guide has all the answers,
no curriculum will work unless viewed in the context of your students.
t to this guide with scratch ideas and notes on the episode pages.
r using an episode, fill out the attached evaluation form in the back. Use,
licate, or request more of these forms. Send them singly or collectively to us.
sincerely want your reactions or suggestions--negative and positive. Your
luations are the key in telling us "what works" and in aiding our revisions of
guides.

AND ABBREVIATIONS

RMC is Project ICE Resource Materials Center serving all public and non-public
districts in CESA 3, 8, and 9. Check the Project ICE Bibliography of available
es. Our address and phone number is on this guide's cover. Feel free to write
l us for any materials or help.
is Bureau of Audio Visual Instruction, 1327 University Avenue, P. O. Box 2093,
, Wisconsin 53701 (Phone: 608-262-1644).
tive means a measurable mental skill, ability, or process based on factual data.
tive refers to student attitudes, values, and feelings.

ACKNOWLEDGEMENTS: The following teachers and consultants participated in the
cf the Supplementary Environmental Education Guides:

CESA #3

D. C. Aderhold, Bonduel
John Anderson, Peshtigo
Walter Anderson, Wausaukee
Bonnie Beamer, Coleman
Merlyn Blonde, Shawano
R. A. Dirks, Gillett
Dennis Dobrzenski, White Lake
LeRoy Gerl, Oconto
Karen Grunwald, St. James (L)
William Harper, Lena
Sister Claudette, St. Charles
Ervin Kunesh, Marinette
Kathleen LeBreck, Oconto
P. E. Lewicki, Gillett
Dorothy O'Brien, Wausaukee
Terry Otto, St. John (L)
Arthur Paulson, Oconto Falls
Marie Prochaska, Lena
Christine Proctor, Wausaukee
Arthur Schelk, Suring
Peter Skroch, Oconto Falls
David Soltesz, Crivitz
Bill Stillion, Shawano
Cathy Warnack, White Lake

Consultants

CESA #3

Dr. Richard Presnell,
Univ. of Wisc.-Greer Bay

CESA #8

Dr. James Marks,
Lawrence University

CESA #9

Dr. Charles Peterson,
St. Norbert College

CESA #8

Mary Anders, Winneconne
Robert Becker, Fox Valley (L)
Mary Chriss, Hortonville
Cliff Christensen, Winneconne
Kenneth Couillard, Hortonville
Raymond Emerich, Hortonville
Mike Ercegovac, Winneconne
Dona Geeding, Menasha
Donald Hale, Winneconne
James Huss, Freedom
Sister Lois Jonet, Holy Angels
Kenneth Kappell, St. Aloysius
Kenneth Keliher, Appleton
Everett Klinzing, New London
Fred Krueger, Oshkosh
Jim Krueger, Winneconne
Mae Rose LaPointe, St. John High
Rosemarie Lauer, Hortonville
Robert Lee, Neenah
Harold Lindhorst, St. Martin (L)
Dennis Lord, Little Wolf
Robert Meyer, Neenah
Arnold Neuzil, Shiocton
James Nuthals, Lourdes
Connie Peterson, St. Martin (L)
Rosemary Rafath, Clintonville
Mark Reddel, St. Martin (L)
Gladys Roland, Little Wolf
Kathryn Rowe, Appleton
Mary Margaret Sauer, Menasha
Edwin Schaefer, Kaukauna
Lee Smoll, Little Chute
Doris Stehr, Mt. Calvary (L)
Ginger Stuvetraa, Oshkosh
Richard Switzer, Little Chute
Tim Van Susteren, Holy Name
Lila Wertsch, St. Margaret Mary
Warren Wolf, Kimberly
Gery Farrell, Menasha

Peter Biol
Lee Clasen
Kathryn Co
Merle Colb
Sara Curti
Duane DeLo
Roberta Di
Janet Elin
Phyllis El
Keith Fawc
Jack Giach
Mike Gleff
Herbert Ha
Gary Heil,
Nannette H
Joseph Huc
Catherine
DeAnna John
Kris Karpi
Mel Kasen,
Jack Koivi
Sister Mar
Ellen Lotz
Judilyn Mc
Priscilla
C. L. Paque
William Rob
Roger Rozn
Jan Serrahn
Calvin Sieg
Mary Smith,
Carol Trimb
Mary Wadzin

ng teachers and consultants participated in the development
lementary Environmental Education Guides:

CESA #8

Mary Anders, Winneconne
Robert Becker, Fox Valley (L)
Mary Chriss, Hortonville
Cliff Christensen, Winneconne
Kenneth Couillard, Hortonville
Raymond Emerich, Hortonville
Mike Ercegovac, Winneconne
Dona Geeding, Menasha
Donald Hale, Winneconne
James Huss, Freedom
Sister Lois Jonet, Holy Angels
Kenneth Kappell, St. Aloysius
Kenneth Keliher, Appleton
Everett Klinzing, New London
Fred Krueger, Oshkosh
Jim Krueger, Winneconne
Mae Rose LaPointe, St. John High
Rosemarie Lauer, Hortonville
Robert Lee, Neenah
Harold Lindhorst, St. Martin (L)
Dennis Lord, Little Wolf
Robert Meyer, Neenah
Arnold Neuzil, Shiocton
James Nuthals, Lourdes
Connie Peterson, St. Martin (L)
Rosemary Rafath, Clintonville
Mark Reddel, St. Martin (L)
Gladys Roland, Little Wolf
Kathryn Rowe, Appleton
Mary Margaret Sauer, Menasha
Edwin Schaefer, Kaukauna
Lee Smoll, Little Chute
Doris Stehr, Mt. Calvary (L)
Ginger Stuvetraa, Oshkosh
Richard Switzer, Little Chute
Tim Van Susteren, Holy Name
Lila Wertsch, St. Margaret Mary
Warren Wolf, Kimberly
Gery Farrell, Menasha

CESA #9

Peter Biolo, West DePere
Lee Clasen, Lux.-Casco
Kathryn Colburn, Algoma
Merle Colburn, Algoma
Sara Curtis, Green Bay
Duane DeLorme, Green Bay
Roberta Dix, St. Joseph Acad.
Janet Elinger, Ashwaubenon
Phyllis Ellefson, Wash. Isle.
Keith Fawcett, West DePere
Jack Giachino, Seymour
Mike Gleffe, St. Matthews
Herbert Hardt, Gibraltar
Gary Heil, Denmark
Nannette Hoppe, How.-Suam.
Joseph Hucek, Pulaski
Catherine Huppert, DePere
DeAnna Johnson, Denmark
Kris Karpinen, West DePere
Mel Kasen, Gibraltar
Jack Koivisto, Green Bay
Sister Mary Alyce, Cathedral
Ellen Lotz, West DePere
Judilyn McGowan, Green Bay
Priscilla Mereness, Wrightstown
C. L. Paquet, Denmark
William Roberts, Sturgeon Bay
Roger Roznowski, Southern Door
Jan Serrahn, Sevastopol
Calvin Siegrist, How.-Suam.
Mary Smith, Green Bay
Carol Trimberger, Kewaunee
Mary Wadzinski, How.-Suam.

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT: I. Energy from the sun, the basic source of all energy, is converted through plant photosynthesis into a form all living things can use for life processes.

Discipline Area: Mathematics

Subject: Sun Energy

Problem Orientation: Graph Read / Metric Rea

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIE	
Cognitive: The student will read a chart showing daily growth of plants in centimeters. Affective: The student will through verbal action support the proposition that energy from the sun is converted through photosynthesis into a form all living things can use for life processes. Skills to be Learned Reading of Graphs Comparing	I. Student-Centered in class activity (Worksheet graph on reverse side) A. Ask children to look at worksheet graph. 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 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 on reverse side)	II. Out Con

from the sun, the basic

all energy, is converted

lant photosynthesis into a

living things can use for

esses.

Discipline Area Mathematics

Subject Sun Energy

Problem Orientation Graph Reading - Metric Reading Grade 5

OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
e student chart show- owth of plants s.	I. Student-Centered in class activity (Worksheet graph on reverse side) A. Ask children to look at worksheet graph. 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 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 on reverse side)	II. Outside Resource and Community Activities
e student verbal ac- the pro- energy is con- h photo- o a form ings can processes.		
Learned aphs		

Resource and Refereence Materials	Continued and Additional Suggested Learnin

Publications:

Conditions Affecting Life
Unit 23 I-C-E RMC no. 130 Mc

Audio-Visual:

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

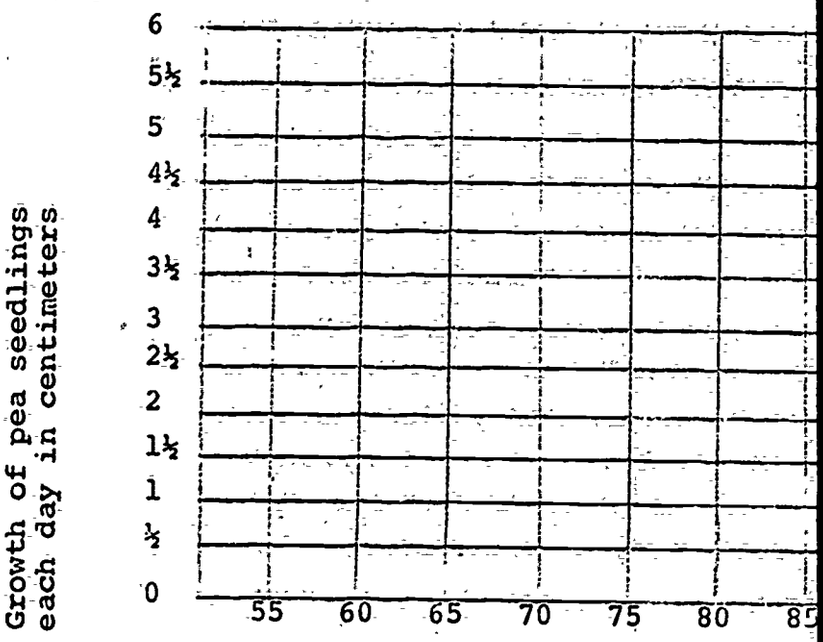
Community:

Greenhouse
Gardens
Farm Areas

7 continued

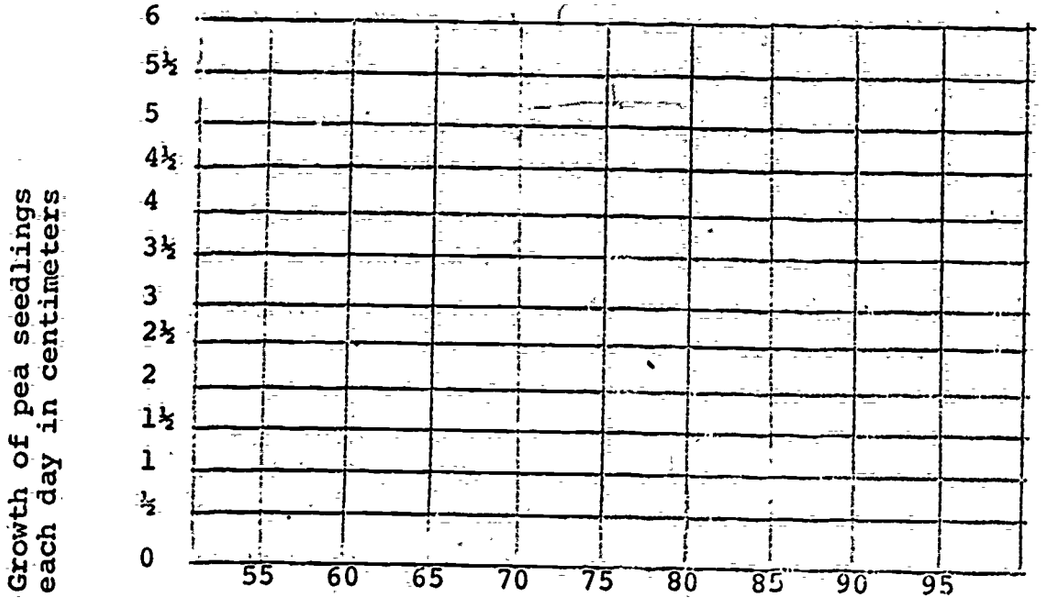
6. When would you expect pea plants to gr
winter, summer or spring?
7. What crops have you noted being affect
temperatures?
8. How do the extreme temperatures for gr
life?

Growth of pea seedlings in centi-meters	Temperatures (Deg					
	55	60	65	70	75	80
	1/2	3/4	1	2	3	5 1/4



eence Materials	Continued and Additional Suggested Learning Experiences
ng Life no. 130 Mc nding .00 min.	I. 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?

Growth of pea seedlings in centi-meters	Temperatures (Degrees F.)								
	55	60	65	70	75	80	85	90	95
	1/2	3/4	1	2	3	5 1/4	4	2 1/2	1



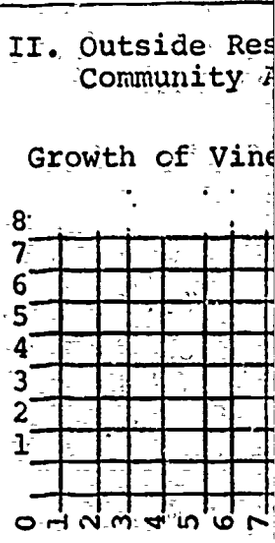
ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT 1. Energy from the sun, the basic source of all energy, is converted through plant photosynthesis into a form all living things can use for life processes.

Discipline Area Mathematics

Subject Metric Measuring pr

Problem Orientation Sun's Energy

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: The student will collect data and graph it to make predictions that extend beyond the observations made and graphed. Affective: The student will defend putting a plant in the sun over putting plant in area devoid of sunlight. Skills to be Learned 1. Making a line graph 2. Reading a meter stick 3. Learning terms lateral, terminal 4. Using metric system.	I. Student-Centered in class activity A. Graphing growth of vines. 1. Plant two vines, one in sunlight, the other in a place devoid of sunlight. Remove lateral growth so terminal growth can be easily measured. 2. Attach each vine to meterstick for measuring purposes. 3. Graph growth on line graph in centimeters, recording date of observations. B. Vary conditions to see what effect variations have on pupils ability to predict growth. (Ex: Quit removing lateral growth) C. Make predictions on future growth. D. Find areas of various growth conditions to observe effect of sun on plants.	II. Outside Res Community A Growth of Vine  Days on which made

rom the sun, the basic

ll energy, is converted

nt photosynthesis into a

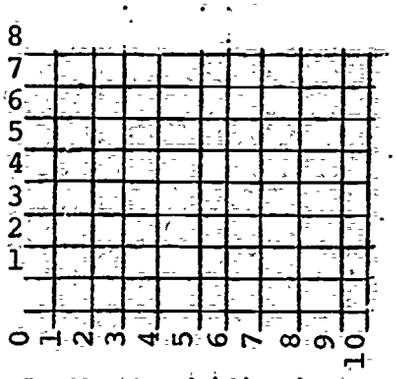
ving things can use for

ses.

Discipline Area Mathematics

Subject Metric Measuring preferred

Problem Orientation Sun's Energy Grade 5

JECTIVES	SUGGESTED LEARNING EXPERIENCES	
e student lata and ake predic- end beyond ons made	I. Student-Centered in class activity A. Graphing growth of vines. 1. Plant two vines, one in sunlight, the other in a place devoid of sunlight. Remove lateral growth so terminal growth can be easily measured. 2. Attach each vine to meterstick for measuring purposes. 3. Graph growth on line graph in centimeters, recording date of observations. B. Vary conditions to see what effect variations have on pupils ability to predict growth. (Ex: Quit removing lateral growth) C. Make predictions on future growth. D. Find areas of various growth conditions to observe effect of sun on plants.	II. Outside Resource and Community Activities Growth of Vine in Centimeters  Days on which observations are made
e student tting a sun over in area light.		
Learned ne graph meter stick erms la- al c system.		

Resource and Reference Materials	Continued and Additional Sugges
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	

nd Reference Materials	Continued and Additional Suggested Learning Experiences
ns: bis and Louis he Sun: Ecology ving World, Morrow	
al: synthesis. A 63 . ($8.75) BAVI Plants and Sun- OC BAVI (11 minutes)	
particular vine nt	

CONCEPT			
2. All living organisms interact among themselves and their environment, forming an intricate unit called an ecosystem.		Discipline Area	Mathematics
		Subject	Measuring - Comp Recognizing shap
		Problem Orientation	Ecosystem

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: The student will identify and describe a square foot of school lawn and study natural life there in. Affective: The student will appreciate his surroundings and the forms of plant life. Skills to be Learned Measuring Recording Charting Gathering Data Drawing or sketching	I. Student-Centered in class activity 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?	II. Outside E Community A. Take chil covered area B. Measure o ground - usi boundary. C. Have chil of 1. grass and record o wers 4. Fung sect life D. What is t kind of plan foot of plot of the plant size, shape terns.) E. Sketch or tify. F. Investiga which the li on the surfa affect the s G. Compare p different pl with sunny e ferences in ties of life of species wi (continued o

ESEA Title III - 59-70-0135-2 Project I-C-E

ing organisms interact

selves and their environment,

intricate unit called an

Discipline Area Mathematics

Subject Measuring - Comparing Numbers
Recognizing shapes

Problem Orientation Ecosystem Grade 5

JECTIVES	SUGGESTED LEARNING EXPERIENCES	
student and de- e foot of d study here in.	I. Student-Centered in class activity 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?	II. Outside Resource and Community Activities A. Take children to grass covered areas. B. Measure off square foot of ground - using string for boundary. C. Have children list the type 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 numbers of species which have been
e student e his nd. the life.		
earned		

(continued on reverse side)

Resource and Reference Materials	Continued and Additional Suggested Learning Ex
Publications: Observing Prcperties 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	II. continued G. observed. H. Note season of year and refer to same are to compare changes. I. Find total number of square feet observed

Ex	nce Materials	Continued and Additional Suggested Learning Experiences
		II. continued G. observed. H. Note season of year and refer to same area again to compare changes. I. Find total number of square feet observed.
are	s ed ces Series -E RMC # 110 sota achers Read the n Forests ard C. C)	
ved	Depend or) ic Foot of .00 on - No lation	

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT

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

Discipline Area Mathemati

Subject Rates - Graph

Problem Orientation Carrying C

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENC	
Cognitive: The learner will use rate pairs to estimate and graph the population change of fruit flies. Affective: The learner will test the factors that determine carrying capacity. Skills to be Learned Graphing Making and interpreting data tables Rates	I. Student-Centered in class activity 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./intial using this rate, calculate the estimated growth 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 your estimate. Why is there a difference? (continued on reverse side)	II. Ou Co A. Th speak popul sects

ati factors are limiting Discipline Area Mathematics

aph organisms living Subject Rates - Graphing

g C uence, thus, each Problem Orientation Carrying Capacity Grade 5

has a carrying capacity.

ENC ES	SUGGESTED LEARNING EXPERIENCES	
Ou Co er Th to eal he pul cts	I. Student-Centered in class activity 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./intial using this rate, calculate the estimated growth 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 your estimate. Why is there a difference? (continued on reverse side)	II. Outside Resource and Community Activities A. The county agent can speak on the increase of population of various insects.
her rs ring ting		

Resource and Reference Materials	Continued and Additional Suggested Learning
Publications: Populations SCIS Text - at I-C-E 100 Co Boughey, Arthur Ecology of Population, MacMillan Co. Audio-Visual: "Flies and Mosquitoes Their Life Cycle and Control" BAVI Community: County Agent Exterminator	I. continued 6. What about the food supply? Should you Does that change the Carrying capacity? B. If students are interested you may introd variations - size of environment (baby food cottage cheese box, etc.) food supply? The s use rates and estimate and graph growth.

nce Materials	Continued and Additional Suggested Learning Experiences
ext - at I-C-E ur on, MacMillan s Their rol" BAVI	I. continued 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.

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT: 4. An adequate supply of pure water is essential for life.

Discipline Area: Mathematics

Subject: Large numbers -

Problem Orientation: Water Conser

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: Student will compute daily amounts of water used. Affective: From studying statistics and solving problems, the student sets a goal about one change in his home on conserving water. Skills to be Learned Large Numbers Problem Solving Graphs Measuring	I. Student-Centered in class activity 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 1 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?	II. Outside R Community A. As a home saving water ment from pu tion, p. 34 B. List the water in you way in which your family and after tw the class. C. Draw a po water conser school corri D. Collect m paper articl statistics o homes and in

ate supply of pure water

l for life.

Discipline Area Mathematics

Subject Large numbers - Measuring Graphs

Problem Orientation Water Conservation Grade 5

JECTIVES	SUGGESTED LEARNING EXPERIENCES	
ider t will mc unts of m study- a.d sol- tle stu- l about is home ater. arned	I. Student-Centered in class activity 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 1 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?	II. Outside Resource and Community Activities A. As a home experiment in saving water, try the experiment from publication Pollution, p. 34 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.

Resource and Reference Materials	Continued and Additional Suggested Learning Expe
Publications: J.K. Couchman, D.F. Wentworth, J.C. MacBean, A. Stecher, Pollution, Holt Rinehart & Winston, 1971 jp. 67-68 I-C-E RMC Audio-Visual: "Water Famine" (54 min.) Carousel Films Inc. Broadway New York, New York 10035 "Problems with Water is People" (30 min.) 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	

rials	Continued and Additional Suggested Learning Experiences
th,	
le"	
ms	

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT: 5. An adequate supply of clean air is essential because most organisms depend on oxygen, through respiration, to release the energy in their food.

Discipline Area: Mather

Subject: Comput

Problem Orientation: Ai

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIEN
Cognitive: The students will compute and record averages and estimates about problems on air pollution. Affective: The student will show his appreciation of an essential supply of clean air. Skills to be Learned Taking averages Computing averages Estimation	I. Student-Centered 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 above .2 parts per million, 10 to 20 people die as a result. In the five 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, 1965-1970, 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, 1965-1970 as a result of air pollution by sulfur dioxide. C. Obtain statistics from Air Pollution Control Section, Depart- (continued on reverse side)

II.

A.
ate
nei
1.
co
a
2.
an
3.
ve
lu
qu
in
B.
pre
les
por
lut
est
and

of clean air is

organisms de-

h respiration,

in their food.

Discipline Area Mathematics

Subject Computation and Averaging

Problem Orientation Air Quality Grade 5

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered 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 above .2 parts per million, 10 to 20 people die as a result. In the five 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, 1965-1970, 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, 1965-1970 as a result of air pollution by sulfur dioxide.

C. Obtain statistics from Air Pollution Control Section, Depart-

(continued on reverse side)

II. Outside Resource and Community Activities

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).

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.

Resource and Reference Materials

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 and Their Control Public Health Service Publications, No. 1548 U.S. Department of Health and Welfare, Washington, D.C.

Air Pollution: Their Facts National Tuberculosis and Respiratory Disease Association

Air Pollution and You John Quigley No. 676 University extension officies 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. Department of Agriculture Science Study Aid No. 5 price 10¢ Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

Continued and Additional Suggested Lea

I. continued

C. ment of Natural Resources, Box 4 53701, concerning amounts of car other dangerous gases that are b the air by each automobile every the projected number of automobi driven by Americans in 1980 how monoxide will be put into the ai to 1970.

Audio-Visual:

0033 Air (10 Min) $2.00 BAVI

Atmospheric Pollution Filmstrip Ward's Scientific

0678 Air Pollution color (11 Mi Men at Bay I-C-E RMC

Community:

National Tuberculosis and Respira Association.

	Continued and Additional Suggested Learning Experiences
	I. continued C. ment of Natural Resources, Box 450, Madison, Wis. 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.
	Audio-Visual: 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
	Community: National Tuberculosis and Respiratory Disease Association.

CONCEPT 6. Natural resources are not equally distributed over the earth or over time and greatly affect the geographic conditions and quality of life.

Discipline Area Mathematics

Subject Measurement & Comapring

Problem Orientation Unequal Resou... tribution

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: The child will measure, compare and record the depth of topsoil and subsoil found in two locations in a valley, flat plain or hillside. Affective: The child will appreciate that the productivity of a given region may be related to the depth of the soil of that region. Skills to be Learned Observation Research Comparing Measuring Concluding	I. Student-Centered in class activity	II. Outside Resourc... Community Activ... A. With a soil auc... Soil Conservation ... will bore soil sa... hillside and from ... ley below and meas... topsoil in inches. ... Samples may be tak... number so that a ... depth for each are... B. Measure length ... species of plant ... thin topsoil areas... C. After it is co... determine type and ... growth possible fo... and how these affe... and food resources... D. Compare types ... productivity using... E. Go to an experi... area and measure ... ous kinds of corn... or lack of fertili... F. Invite a soil ... representative to ... and types in coun... cuss with class ho... systems are depend...

esources are not equally
over the earth or over
tly affect the geo-
tions and quality of life.

Discipline Area Mathematics

Subject Measurement & Comapring Numbers

Problem Orientation Unequal Resource Distribution

Grade 5

CTIVES	SUGGESTED LEARNING EXPERIENCES	
child mpare epth ub- o lo- ley, ll- child that of a be epth hat rned	I. Student-Centered in class activity	II. Outside Resource and Community Activities 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.

Resource and Reference Materials	Continued and Additional Suggested Learning Exp
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	

Exp	Materials	Continued and Additional Suggested Learning Experiences
	nziger	
	.) I arth	

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT 7. Factors such as facilitating transportation, economic conditions, population growth, and increased leisure time have a great influence on changes in land use and centers of population density.

Discipline Area Mathemati

Subject Ordered P

Problem Orientation Popul

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPE
Cognitive: The child will construct tables showing graphically how available facilities, space and resources will be necessarily shared with others if population growth continues at the present rate. Affective: The child will suggest how the increased population growth will affect land use and centers of population density.	I. Student-Centered in class activity A. With the principal's help, the child will determine from school records, the present ratio of students to each classroom, teacher, badketball, 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. Based on the above graphic displays (pictographs might be preferable) a discussion could be developed comparing not only students to rooms or basketballs but people in the nation to land use areas or facilities and resources under increased population numbers.
Skills to be Learned Collecting data Organizing Constructing Pictographs Making judgements	

II. Ou
Co
A. Inv
cial
give
public
time.
needs.
B. Usi
popula
ed pai
in fac
graphi
resour
C. Dis

such as facilitating trans-

economic conditions, popu-

wth, and increased leisure

a great influence on changes

e and centers of population density.

Discipline Area Mathematics

Subject Ordered Pairs - - Rate Pairs

Problem Orientation Population Grade 5

PE	OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
	e child : tables .cally how .lities, ources will y shared : popula- ntinues at ate.	I. Student-Centered in class activity A. With the principal's help, the child will determine from school records, the present ratio of students to each classroom, teacher, badketball, 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. Based on the above graphic displays (pictographs might be preferable) a discussion could be developed comparing not only students to rooms or basketballs but people in the nation to land use areas or facilities and resources under increased population numbers.	II. Outside Resource and Community Activities 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 ordered pairs skills, show increase in facilities and space (in graphic way) needed to maintain resources available per person. C. Discuss
	child ow the lation ffect land s of popu- .		
	Learned : ictographs rts		

Resource and Reference Materials	Continued and Additional Suggested
Publications: The Population Bomb, Ehrlich, Paul R. New York Ballantine Books, 1968 Our Precorious Habitat, Benarde, Melvin New York W.W. Norton & Co. Inc. 1970 Audio-Visual: "Population Trends - Ecological Crisis" at I-C-E RMC K 14 Community: Mayor Park Director	

d Reference Materials	Continued and Additional Suggested Learning Experiences
s: ior Bomb, Ehrlich, Paul Ballantine Books, 1968 ous Habitat, Benarde, Ycrk W.W. Norton & 70 l: Trends - Ecological -C-E RMC K 14 or	

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT	8. Cultural, economic social, and political factors determine status of man's values and attitudes toward his environment.	Discipline Area	Mathematics
		Subject	Computation - Es
		Problem Orientation	Attitude towar population

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: Student will compute numbers and record rat population. He will compute total pounds of food destroyed by rats. Affective: Student will suggest that the population of rats will cause destruction and disease. Student will take part in rat extermination program.	I. Student-Centered in class activity 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. Compare this to the size of New York City's (continued on reverse side.)	II. Outside R Community A. To note c there of: 1. Visit fa 2. Feed mil 3. Storage used by sto and industr 4. Dumps.
Skills to be Learned Estimating Computing totals Measuring Comparing		

omic social,

tors determine

alues and attitudes

nment.

Discipline Area Mathematics

Subject Computation - Estimating

Problem Orientation Attitude toward rat population

Grade 5 -

IVES	SUGGESTED LEARNING EXPERIENCES	
ill re- l oy- e on	I. Student-Centered in class activity 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. Compare this to the size of New York City's (continued on reverse side.)	II. Outside Resource and Community Activities A. To note damage and prevention there of: 1. Visit farms 2. Feed mills 3. Storage areas or warehouses used by stores, restaurants, and industry. 4. Dumps.

Resource and Reference Materials	Continued and Additional Suggested Learnin
Publications: McCue, George, Ecology- The City Benziger, Inc. New York at I-C-E RMC # 130 Mc10 **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	I. continued D. 3. population today. 4. From given facts estimate annual cos

aterials	Continued and Additional Suggested Learning Experiences
The City it	I. continued D. 3. population today. 4. From given facts estimate annual cost of rat damage.
54 Army)	
AVI	

CONCEPT

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

Discipline Area Mathematics

Subject Ratio and Ratio Com

Problem Orientation Attitude toward lution abatemen

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: The student will write in ratio forms, the voting trend on pollution abatement laws. Affective: The student is alert to laws which indicate positive attitude toward pollution. Skills to be Learned 1. Collection of data 2. Setting up data tables 3. Ratios 4. Interpreting data	I. Student-Centered in class activity A. Write to Senator Proxmire or Nelson to find statistics of voting on environmental questions and pollution abatement laws. B. From these materials set up table to show the change of voting, trend comparing your earliest reports with the later ones. C. Set up ratios of pro and con for each bill. D. Write a short statement to clarify the trend and explain the change. E. You may repeat the process with the SST. F. Use the simulation Game Recycling and Resources from I-C-E RMC Sg6 Set I.	II. Outside Re Community A. Business c ger who has t lution abater in to speak t B. Write a le further suppo laws. C. Try to fin local polluti fire burning usage.

ESEA Title III - 59-70-0135-2 Project I-C-E

social, and

rmine status of

ides toward

Discipline Area Mathematics

Subject Ratio and Ratio Comparison

Problem Orientation Attitude toward pollution abatement laws Grade 5

SUGGESTED LEARNING EXPERIENCES	
I. Student-Centered in class activity A. Write to Senator Proxmire or Nelson to find statistics of voting on environmental questions and pollution abatement laws. B. From these materials set up table to show the change of voting, trend comparing your earliest reports with the later ones. C. Set up ratios of pro and con for each bill. D. Write a short statement to clarify the trend and explain the change. E. You may repeat the process with the SST. F. Use the simulation Game Recycling and Resources from I-C-E RMC Sg6 Set I.	II. Outside Resource and Community Activities 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.

Resource and Reference Materials	Continued and Additional Suggested Learning
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 SG6 from I-C-E RMC Set I	
Community: Newspaper Reporter Mayor or Business man	

ng	e Materials	Continued and Additional Suggested Learning Experiences
	Environment ly # 100 hart - Winston from the ces" C Set I	

CONCEPT

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

Discipline Area Mathematics

Subject Measurement,

Problem Orientation Land Use

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES
Cognitive: The student will draw to scale on paper 1/2 acre of land, landscape it and compute the cost of materials used. Affective: The student will suggest ways to improve his outdoor environment. Skills to be Learned Square Area Addition of money Scale model drawing	I. Student-Centered in class activity A. Have a landscaper 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 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 landscaper 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. H. Use the Simulation Game - Man and His Environment from I-C-E RMC.

II. Outsi... Comm...
A. Visi...
B. Visi...

ESEA Title III - 59-70-0135-2 Project I-C-E

ility to manage,
hange his en-

Discipline Area Mathematics

Subject - Measurement, Scale Models

Problem Orientation Land Use Grade 5

ES	SUGGESTED LEARNING EXPERIENCES	
nt n nd, er- nt	I. Student-Centered in class activity A. Have a landscaper 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 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 landscaper 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. H. Use the Simulation Game - Man and His Environment from I-C-E RMC.	II. Outside Resource and Community Activities A. Visit the tree nursery. B. Visit a wayside or park.

Resource and Reference Materials	Continued and Additional Suggested Learning Experi[e]s
Publications: Dudley, Ruth H. Our American Trees New York Crowell 1956 Bulla, Clyde R. A Tree is a Plant Crowell, 1962 Buelcher, Jean M. & 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 shrug catalog Stark Brothers Louisiana Missouri 63353	

s	Continued and Additional Suggested Learning Experiences

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

Discipline Area: Mathematics

Subject: Decimals - Pr

Problem Orientation: Short-Long

ESEA Title III - 59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: Child will solve problems that deal with economic factors involving pollution. Child observes building landmarks etc. noting observations of environmental deterioration. Affective: The student will develop an appreciation for the above concept from working with problems dealing with the monetary aspect of environmental losses. Skills to be Learned Problem solving Reasoning, Observing Computing, Analyzing	I. Student-Centered in class activity 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 don't? 2. It will take a 5 year investment of $42 billion to clean up water. Over half is industry's responsibility. If industries share is 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. It is estimated that Americans will need 700 billion gallons of (continued on reverse side)	II. Outsi Commu A. Take nearest the effe in the a damaging and work marks ar or must of these reality, B. Go or area not site tha ing on i side of of an ac The stor on the u that af to brea

economic gains may

erm environmental

Discipline Area Mathematics

Subject Decimals - Problem Solving

Problem Orientation Short-Long term factors Grade 5

TIVES	SUGGESTED LEARNING EXPERIENCES	
will at deal tors on. ilding ting nviron- ion. udent appre- bove ing ling as- ntal ned ing ing	I. Student-Centered in class activity 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 don't? 2. It will take a 5 year investment of $42 billion to clean up water. Over half is industry's responsibility. If industries share is 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. It is estimated that Americans will need 700 billion gallons of (continued on reverse side)	II. Outside Resource and Community Activities 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.

Resource and Reference Materials	Continued and Additional Suggested Learning
Publications: The Only Earth We Have Laurence Pringle, MacMillan Co. 866 Third Avenue, New York City 10022 $4.50 hardcover, $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	I. continued 4. underground water in 1980(per year). I billion gallons will be available, what i available water to that which will be nee

Continued and Additional Suggested Learning Experiences

I. continued

4. 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?

ESEA Title III - 59-70-0135-2 Project I-C-E

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

Discipline Area: Mathematics

Subject: Numeration (Multipli

Problem Orientation: Waste Disposal

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES
Cognitive: The student will compute the amount of waste-paper, bottles, or cans, etc., which could be found in a given area. Affective: Students will critize actions of their own and their families and respond to the beauty of a litter-free landscape.	I. Student-Centered in class activity 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.
Skills to be learned: Planning Observation Collecting Organizing Computing Criticizing	II.

uplicated or

te significant

erations over

Discipline Area Mathematics

Subject Numeration (Multiplication)

Problem Orientation Waste Disposal Grade 5

VES	SUGGESTED LEARNING EXPERIENCES	
I. dent will of waste- cans, etc., nd in a given its will critize wn and their nd to the beauty landscape.	I. Student-Centered in class activity 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.	II. Outside Resource and Community Activities 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. Write to County Road Commissioner for mileage covered by County Cleanup Crews.

ed:

Resource and Reference Materials	Continued and Additional Suggested Learning
Publications: National Wildlife Federation EQ Index, I-C-E IMC Bronson, William, How To Kill A Golden State Aidio-Visual: Film (color), Land Betrayed (Riggins) 10 minutes, $3.75 BAVI Community: Town Chairman Road Commissioner	I. (continued) D. Based on the amount of litter picked activities, compute by multiplicatio litter in townships, county or state II. (continued) 4. Children living in village or city c cost of cleaning in parks, streets, 5. As a class project, organize and car community "clean up and spruce up" c

ce Materials	Continued and Additional Suggested Learning Experiences
deration EQ	I. (continued) D. Based on the amount of litter picked up in outside activities, compute by multiplication the tons of litter in townships, county or state.
To Kill A	II. (continued) 4. Children living in village or city could find cost of cleaning in parks, streets, etc. 5. As a class project, organize and carry out a community "clean up and spruce up" campaign.
etrayed $3.75	

CONCEPT 12. Private ownership must be regarded as a stewardship and should not encroach upon or violate the individual right of others.

Discipline Area Mathematics

Subject Computation

Problem Orientation Conservation

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: The learner will compute amounts and costs of board feet used and wasted. Affective: The student will appreciate the monetary value of the tree for building purposes at the present and in the future. Skills to be Learned Multiplying Observing Listing	I. Student-Centered in class activity 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.	II. Outside Resou Communtiy Act A. Invite in a r lition team to d ties of tearing ing homes in the posed building p B. Visit a lumbe different kinds lumber. C. Visit a sawmi waste caused in boards. D. Talk to local learn how he co

ESEA Title III - 59-70-0135-2 Project I-C-E

wnership must be re-
tewardship and should
upon or violate the
ght of others.

Discipline Area Mathematics

Subject Computation

Problem Orientation Conservation Grade 5

CTIVES	SUGGESTED LEARNING EXPERIENCES	
earner unts rd sted. tudent the mon- he tree poses nd	I. Student-Centered in class activity 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.	II. Outside Resource and Communtiy Activities 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.
rned		

Resource and Reference Materials	Continued and Additional Suggested Learning Exp
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	

Exp	terials	Continued and Additional Suggested Learning Experiences
	5 chill ard,	

CONCEPT

12 Private ownership must be regarded as a stewardship and should not encroach upon or violate the individual right of others.

Discipline Area

Subject

Problem Orientation

BEHAVIORAL OBJECTIVES	SUGGESTED LEARN
Cognitive: The child will compute the amount of wastepaper, bottles, or cans, etc. which could be found in a given area. Affective: Students will criticize actions of their own and their families and respond to the beauty of a litter free landscape.	I. Student-Centered in class activity A. The class will select an area of roadside which they feel needs to be cleaned up and make preparations for an environmental cleanin 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 ma have figures on state highway miles
Skills to be Learned Planning Observation Collecting Organizing Computing Criticizing	

FSEA Title III - 69-70-0135-2 Project I-C-E

wnership must be re-

tewardship and should

upon or violate the

ight of others.

Discipline Area Mathematics

Subject Numeration (Multiplication)

Problem Orientation Waste Disposal Grade 5

CTIVES	SUGGESTED LEARNING EXPERIENCES	
child amount ottles, ich n a nts ctions their pond to litter	I. Student-Centered in class activity 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 roadsiae 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.	II. Outside Resource and Community Activities A. Tour a measured or known length of roadside collecing 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 "clean up and spruce up" campaign.
rned		

Resource and Reference Materials	Continued and Additional Suggested Learning Ex
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	

Ex	erials	Continued and Additional Suggested Learning Experiences
	ion C rom	

PROJECT I-C-E Episode Evaluation Form (Reproduce or du

Please fill in:
Subject: _____

Grade: _____

Concept No. Used: _____

In commenting on each episode used i
form. Feel free to adapt it and add n
your critiques and comments - negative
hand column, please rate (poor, good,
make specific comments or suggestions
vided to help us make this a more usab

Poor	Good	Exc.	
			I. Behavioral Objectives A. Cognitive:
			B. Affective:
			II. Skills Developed
			III. Suggested Learning Experiences A. In Class:
			B. Outside & Community Activities:
			IV. Suggested Resource & Reference Materials (specific suggestions & comments)

CT I-C-E Episode Evaluation Form (Reproduce or duplicate as needed)

In commenting on each episode used in your class, please use this form. Feel free to adapt it and add more pages. Let us know all your critiques and comments - negative and positive. In the left-hand column, please rate (poor, good, excellent) each item. Also, make specific comments or suggestions if possible in the space provided to help us make this a more usable guide. Thank you.

. B avioral Objectives
A ognitive:

B. Affective:

. Skills Developed

. Suggested Learning Experiences
A. In Class:

B. Outside & Community Activities:

. Suggested Resource & Reference Materials
(specific suggestions & comments)

Project I-C-E
Serving Schools in CESA 3-8-9
1927 Main Street
Green Bay, WI 54301

Project I - C - E INSTRUCTION - CURRICULUM - ENVIRO - C -

A SUPPLEMENTARY PROGRAM FOR ENVIRONMENTAL EDUCATION

DISCIPLINE AREA Mathematics GRADE 6

Produced under Title III E.S.E.A.
PROJECT I-C-E
Serving Schools in CESA 3-8-9
1927 Main Street
Green Bay, Wisconsin 54301
(414) 432-4338
(after Dec. 1, 1972 - 468-7464)

Robert War
Robert Kel
George How

IRC - E INSTRUCTION - CURRICULUM - ENVIRONMENT

ARY PROGRAM FOR ENVIRONMENTAL EDUCATION

REA Mathematics GRADE 6

er Title III E.S.E.A.
E
ols in CESA 3-8-9
treet
War Wisconsin 54301
Kel 38
How 1, 1972 - 468-7464)

Robert Warpinski, Director
Robert Kellner, Asst. Director
George Howlett, EE Specialist

PREFACE

"Oikus" for house is the Greek origin of the term "ecology studies our house--whatever or wherever it may be. Like an expand or contract to fit many ranges--natural and man-made. environments, our many "houses" if we omit rancor and cite complexities. Our "oikus" uses the insights of all subjects multidisciplinary program like ours necessarily results. A a long time, our program ranges K thru 12. The environment values. These values have their origin in the "oikus" of ou minds. Let us become masters of our house by replacing the with "Know thyself and thine house."

1. Written and designed by your fellow teachers, this guide to fit appropriately into existing, logical course conten
2. Each page or episode offers suggestions. Knowing your st to adapt or adopt. Limitless chances are here for your e Many episodes are self contained, some open-minded, still developed over a few days.
3. Try these episodes, but please pre-plan. Why? Simply, n and no curriculum will work unless viewed in the context
4. React to this guide with scratch ideas and notes on the e
5. After using an episode, fill out the attached evaluation duplicate, or request more of these forms. Send them sin We sincerely want your reactions or suggestions--negative evaluations are the key in telling us "what works" and in the guides.

TERMS AND ABBREVIATIONS

ICE RMC is Project ICE Resource Materials Center serving a school districts in CESA 3, 8, and 9. Check the Project ICE resources. Our address and phone number is on this guide's or call us for any materials or help.

BAVI is Bureau of Audio Visual Instruction, 1327 Universit Madison, Wisconsin 53701 (Phone: 608-262-1644).

Cognitive means a measurable mental skill, ability, or proc

Affective refers to student attitudes, values, and feelings

PREFACE

for house is the Greek origin of the term "ecology". Environmental education
e house--whatever or wherever it may be. Like an umbrella, our house can
contract to fit many ranges--natural and man-made. We can add quality to our
ts, our many "houses" if we omit rancor and cite long range gains, costs, and
es. Cur "oikus" uses the insights of all subjects. Thus, a rational, positive,
plinary program like ours necessarily results. Also, since attitudes grow over
e, our program ranges K thru 12. The environment mirrors our attitudes or
hese values have their origin in the "oikus" of our collective and individual
t us become masters of our house by replacing the Greek adage of "Know thyself"
thyself and thine house."

and designed by your fellow teachers, this guide is supplementary in nature--
appropriately into existing, logical course content.
ge or episode offers suggestions. Knowing your students best, you decide what
t or adopt. Limitless chances are here for your experimentation and usage.
isodes are self contained, some open-minded, still others can be changed or
ed over a few days.
se episodes, but please pre-plan. Why? Simply, no guide has all the answers,
curriculum will work unless viewed in the context of your students.
o this guide with scratch ideas and notes on the episode pages.
sing an episode, fill out the attached evaluation form in the back. Use,
te, or request more of these forms. Send them singly or collectively to us.
erely want your reactions or suggestions--negative and positive. Your
tions are the key in telling us "what works" and in aiding our revisions of
ides.

D ABBREVIATIONS

is Project ICE Resource Materials Center serving all public and non-public
stricts in CESA 3, 8, and 9. Check the Project ICE Bibliography of available
. Cur address and phone number is on this guide's cover. Feel free to write
s for any materials or help.
Bureau of Audio Visual Instruction, 1327 University Avenue, P. O. Box 2093,
Wisconsin 53701 (Phone: 608-262-1644).
ve means a measurable mental skill, ability, or process based on factual data.
ve refers to student attitudes, values, and feelings.

ACKNOWLEDGEMENTS: The following teachers and consultants partici
of the Supplementary Environmental Education C

CESA #3

D. C. Aderhold, Bonduel
John Anderson, Peshtigo
Walter Anderson, Wausaukee
Bonnie Beamer, Coleman
Merlyn Blonde, Shawano
R. A. Dirks, Gillett
Dennis Dobrzenski, White Lake
LeRoy Gerl, Oconto
Karen Grunwald, St. James (L)
William Harper, Lena
Sister Claudette, St. Charles
Ervin Kunesh, Marinette
Kathleen LeBreck, Oconto
P. E. Lewicki, Gillett
Dorothy O'Brien, Wausaukee
Terry Otto, St. John (L)
Arthur Paulson, Oconto Falls
Marie Prochaska, Lena
Christine Proctor, Wausaukee
Arthur Schelk, Suring
Peter Skroch, Oconto Falls
David Soltesz, Crivitz
Bill Stillion, Shawano
Cathy Warnack, White Lake

Consultants

CESA #3

Dr. Richard Presnell,
Univ. of Wisc.-Green Bay

CESA #8

Dr. James Marks,
Lawrence University

CESA #9

Dr. Charles Peterson,
St. Norbert College

CESA #8

Mary Anders, Winneconne
Robert Becker, Fox Valley (L)
Mary Chriss, Hortonville
Cliff Christensen, Winneconne
Kenneth Couillard, Hortonville
Raymond Emerich, Hortonville
Mike Ercegovac, Winneconne
Dona Geeding, Menasha
Donald Hale, Winneconne
James Huss, Freedom
Sister Lois Jonet, Holy Angels
Kenneth Kappell, St. Aloysius
Kenneth Keliher, Appleton
Everett Klinzing, New London
Fred Krueger, Oshkosh
Jim Krueger, Winneconne
Mae Rose LaPointe, St. John Hig
Rosemarie Lauer, Hortonville
Robert Lee, Neenah
Harold Lindhorst, St. Martin (L)
Dennis Lord, Little Wolf
Robert Meyer, Neenah
Arnold Neuzil, Shiocton
James Nuthals, Lourdes
Connie Peterson, St. Martin (L)
Rosemary Rafath, Clintonville
Mark Reddel, St. Martin (L)
Gladys Roland, Little Wolf
Kathryn Rowe, Appleton
Mary Margaret Sauer, Menasha
Edwin Schaefer, Kaukauna
Lee Smoll, Little Chute
Doris Stehr, Mt. Calvary (L)
Ginger Stuvetraa, Oshkosh
Richard Switzer, Little Chute
Tim Van Susteren, Holy Name
Lila Wertsch, St. Margaret Mary
Warren Wolf, Kimberly
Gery Farrell, Menasha

lowing teachers and consultants participated in the development Supplementary Environmental Education Guides:

CESA #8

Mary Anders, Winneconne
Robert Becker, Fox Valley (L)
Mary Chriss, Hortonville
Cliff Christensen, Winneconne
Kenneth Couillard, Hortonville
Raymond Emerich, Hortonville
Mike Ercegovac, Winneconne
Dona Geeding, Menasha
Donald Hale, Winneconne
James Huss, Freedom
Sister Lois Jonet, Holy Angels
Kenneth Kappell, St. Aloysius
Kenneth Keliher, Appleton
Everett Klinzing, New London
Fred Krueger, Oshkosh
Jim Krueger, Winneconne
Mae Rose LaPointe, St. John High
Rosemarie Lauer, Hortonville
Robert Lee, Neenah
Harold Lindhorst, St. Martin (L)
Dennis Lord, Little Wolf
Robert Meyer, Neenah
Arnold Neuzil, Shiocton
James Nuthals, Lourdes
Connie Peterson, St. Martin (L)
Rosemary Rafath, Clintonville
Mark Reddel, St. Martin (L)
Gladys Roland, Little Wolf
Kathryn Rowe, Appleton
Mary Margaret Sauer, Menasha
Edwin Schaefer, Kaukauna
Lee Smoll, Little Chute
Doris Stehr, Mt. Calvary (L)
Ginger Stuvetraa, Oshkosh
Richard Switzer, Little Chute
Tim Van Susteren, Holy Name
Lila Wertsch, St. Margaret Mary
Warren Wolf, Kimberly
Gery Farrell, Menasha

CESA #9

Peter Biolo, West DePere
Lee Clasen, Lux.-Casco
Kathryn Colburn, Algoma
Merle Colburn, Algoma
Sara Curtis, Green Bay
Duane DeLorme, Green Bay
Roberta Dix, St. Joseph Acad.
Janet Elinger, Ashwaubenon
Phyllis Ellefson, Wash. Isle.
Keith Fawcett, West DePere
Jack Giachino, Seymour
Mike Gleffe, St. Matthews
Herbert Hardt, Gibraltar
Gary Heil, Denmark
Nannette Hoppe, How.-Suam.
Joseph Hucek, Pulaski
Catherine Huppert, DePere
DeAnna Johnson, Denmark
Kris Karpinen, West DePere
Mel Kasen, Gibraltar
Jack Koivisto, Green Bay
Sister Mary Alyce, Cathedral
Ellen Lotz, West DePere
Judilyn McGowan, Green Bay
Priscilla Mereness, Wrightstown
C. L. Paquet, Denmark
William Roberts, Sturgeon Bay
Roger Roznowski, Southern Door
Jan Serrahn, Sevastopol
Calvin Siegrist, How.-Suam.
Mary Smith, Green Bay
Carol Trimberger, Kewaunee
Mary Wadzinski, How.-Suam.

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT: Energy from the sun, the basic source of all energy, is converted through plant photosynthesis into a form all living things can use for life processes.

Discipline Area: N...as

Subject: S...ugh

Problem Orientation: ...l...s.

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPER...	
Cognitive: The student, through the use of observation and conclusion, will compute the fractional parts of his community that can sustain adequate plant growth. Affective: The student will recognize certain growth of vegetation in accordance to direct rays of the sun compared to diverted rays of the sun. Skills to be Learned Graphing Charting Concluding Observing Recording	I Student-Centered in class activity A. Teacher states: Compare the sun's energy in certain areas of the school yard (according to plant growth). 1. Then have the students divide the yard into certain sections. a. Where sun rays hit directly. b. Where sun rays are diverted, etc. 2. Then, through the use of observation, have student compute the fractional parts of each section of the yard that can sustain plant growth.	II. Outsid... Commun... A. On a... take... fiel... stre... sect... in t... B. Brin... flor... have... fere... thes... foun...

asic source of all

ugh plant photo-

living things

s.

Discipline Area Math

Subject Fractions

Problem Orientation Energy Grade 6

SUGGESTED LEARNING EXPERIENCES	
I. Student-Centered in class activity A. Teacher states: Compare the sun's energy in certain areas of the school yard (according to plant growth). 1. Then have the students divide the yard into certain sections. a. Where sun rays hit directly. b. Where sun rays are diverted, etc. 2. Then, through the use of observation, have student compute the fractional parts of each section of the yard that can sustain plant growth.	II. Outside Resource and Community Activities A. On a larger basis take the students on a field trip on a nearby street and have them section it as they did in the school yard. B. Bring in an ecologist, florist, or landscaper and have him explain the different vegetation found in these areas and why they are found there.

Resource and Reference Materials	Continued and Additional Suggested
Publications: Any local articles on city pollution 1. Newspaper 2. Magazine Audio-Visual: Sound Filmstrip: The Deciduous Forest, Warren Schloat Films, Inc., West Nyaack, N.y. Film: #6743 Green Plants and Sunlight, color, 11 min., $4, (Intermediate level), 1966 B.A.V.I. Community: Get local authorities (i.e., City Planner or Park Commissioner) to lead a field trip through the city.	

ted s	Continued and Additional Suggested Learning Experiences
ty o city.	

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT: All living organisms interact among themselves and their environment, forming an intricate unit called an ecosystem.	Discipline Area Mathe... Subject Working ... Problem Orientation Ec...
BEHAVIORAL OBJECTIVES	**SUGGESTED LEARNING EX...**
Cognitive: The student will explain data presented in graphs and construct graphs to summarize data. Affective: The student will become conscious of the various types of plants that are supported by these soils.	I. Student-Centered in class activity A. Measuring, recording, graphing plant growth at specific intervals. 1. Using an area map, discuss the possible sites for collecting soil (to obtain variety) 2. Actual work of preparing containers planting seeds or plants -- daily tasks to be carried out as plants begin to grow. 3. Measure and record the growth of a plant over regular intervals of time (use metric measure if possible). 4. Graph the recorded results of the plant growth with either bar, line, or picto-graphs. 5. Suggest integration with science unit
Skills to be learned: Observation Me suring Cl sification Recording Concluding	

eract among

ironment,

t called an

Discipline Area Mathematics

Subject Working with Graphs, Charts, Tables

Problem Orientation Ecosystem Grade 6

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

A. Measuring, recording, graphing plant growth at specific intervals.

1. Using an area map, discuss the possible sites for collecting soil (to obtain variety)

2. Actual work of preparing containers planting seeds or plants -- daily tasks to be carried out as plants begin to grow.

3. Measure and record the growth of a plant over regular intervals of time (use metric measure if possible).

4. Graph the recorded results of the plant growth with either bar, line, or picto-graphs.

5. Suggest integration with science unit

II. Outside Resource and Community Activities

A. Library
1. Locate information about the major soil groups in your area.

B. Immediate area - Nature hike
1. Observe abundance and variety of vegetation in different soils.

C. Field trip to a farm
1. Interview the farmer
a. What kind of soil
b. What type of plants

D. Field trip to a Florist

1. Observe plants grown under controlled conditions
2. Why do certain plants grow in certain soils?

Resource and Reference Materials	Continued and Additional Suggested Lear
Publications: Brennan, Mathew J., J. G. Publishing Co., People and Their Environment: Teachers' Curriculum Guide to Conservation Education, 6 N. Michigan Ave., Chicago, Ill. 60602 **Audio-Visual:** #55035 Seed Sprouting, time lapse film, 2 min., Walt Disney Education Materials Co., 800 Sonora Ave., Glendale, Calif. 91201 **Community:** Farm Florist DNR Library School Forest or Outdoor Center	

rials	Continued and Additional Suggested Learning Experiences
d ers' f- chigan	
me Disney 800 lif.	

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT	Environmental factors are limiting on the numbers of organisms living within their influence, thus, each environment has a carrying capacity.	Discipli... Subject Problem C...

BEHAVIORAL OBJECTIVES	SUGGESTED LEA...
Cognitive: The student will differentiate between the sets given in the classroom activity. Affective: The student will appreciate, through observation of life in an aquarium, that each environment has its own carrying capacity.	I. Student-Centered ... activity A. Guppy food set 1. Set up 10 ga... aquarium sys... ped with ave... filtration a... tion systems 2. Daily supply... maximum amou... fish food fo... guppies to s... (Set I) 3. Put 10 male ... and 10 femal... tank. (Set I... 4. When second ... tion of fish ... watch for di... of the balan... compared to ... capacity of ... to survive. 5. Use O_2 instea...
Skills to be learned: Observation Comparison Recording Naming Classifying	

actors are limiting on the

nisms living within their

, each environment has a

ty.

Discipline Area Mathematics

Subject Sets

Problem Orientation Carrying Capacity Grade 6

LEA BJECTIVES	SUGGESTED LEARNING EXPERIENCES	
ed udent will dif- n the sets given activity. udent will gh observation arium, that each ts own carrying ned:	I. Student-Centered in class activity A. Guppy food set study 1. Set up 10 gallon aquarium system equipped with average filtration and airation systems. 2. Daily supply of maximum amount of fish food for twenty guppies to survive (Set I) 3. Put 10 male guppies and 10 females in tank. (Set II) 4. When second generation of fish appear, watch for disturbance of the balance of food compared to carrying capacity of the fish to survive. (Set III) 5. Use O_2 instead of food.	II. Outside Resource and Community Activities A. Take a field trip to nearest natural body of water and note various life forms in the woods and lakes. B. Use local library or school library to look up deer, bird, etc. populations according to the carrying capacity of the land. C. Have a conservationist come in and talk on some of the above mentioned subjects and topics.

Resource and Reference Materials	Continued and Additional Su
Publications: Little, Charles E., Challenge of the Land, N.Y. :Oxford University 1949 Stewardship - The Land - The Land Owner - The Metropolis, N. Y. Open Space Institute, Inc. 1968 Audio - Visual: Interdependence of Living Things , I-C-E RMC , Filmstrip Set #13 Community: Library Lake DNR Office	

Su	ence Materials	Continued and Additional Suggested Learning Experiences
	, Challenge of ford University	
	Land - The Land olis, N. Y. Open nc. 1968	
	Living Things , trip Set #13	

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT: An adequate supply of pure water is essential to life.

Discipline Area: Mathema

Subject: Recordi

Problem Orientation:

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EX
Cognitive: Observe and record the amount of water used and wasted within the school and community. Affective: The student will offer suggestions of ways in which water can be conserved.	I. Student-Centered in class activity A. Measurement of water was as school water fountain continuously run. 1 How much water is wasted from a leaky faucet? 2 Number of students in cl versus amounts of water used on an average (60 gallons) per person per day. Number of people in the community B. Procedures: 1 Use containers expressing standard and metric units of measurement (cups, pints, quarts and gallons 2 Compute amounts collected per hour in relation to number of hours in school day, week, year, etc.
Skills to be learned: Knowledge of liquid measures (standard and metric) Conservation of smaller to larger units over time and rate Problem solving	

ema pure Discipline Area Mathematics

rdi life. Subject Recording-Problem Solving-Measurement

Problem Orientation Water Grade 6

, EX VES	SUGGESTED LEARNING EXPERIENCES	
record and l and was ain ill ted served. cla er) er urea to and sing nits ons ted o ool	I. Student-Centered in class activity A. Measurement water wasted as school wa untains continuously run. 1 How much water is wasted from a leaky faucet? 2 Number of students in class versus amounts of water used on an average (60 gallons) per person per day. Number of people in the community B. Procedures: 1 Use containers expressing standard and metric units of measurement (cups, pints, quarts and gallons). 2 Compute amounts collected per hour in relation to number of hours in school day, week, year, etc.	II. Outside Resource and Community Activities A. Waste treatment plant 1. How many gallons of water a day are used? 2. What is added to the water? 3. Controls concerning water usage. B. A Home 1. Tabulations (same as above) a. Kitchen b. Bathroom

Resource and Reference Materials	Continued and Additional Suggeste
Publications: Leinwand, Gerald and Popkin, Gerald Air and Water Pollution, Washington Square Press 630 Fifth Ave., N.Y. City 10020 Audio-Visual: Kit #5, Aggradation - Degradation, (set of 10 filmstrips) Eye Gate House, Inc. 1970, I-C-E RMC Water Famine, 54 minutes, Carousal Films, Inc., 1501 Broadway, New York, N.Y. 10035 Problem with Water is People, 30 minutes, request color, McGraw - Hill Contemporary Films, 330 W. 42nd Street, New York, N.y. 10018 Community: Community Water Department Sewage Plant	

ste ence Materials	Continued and Additional Suggested Learning Experiences
nd Popkin,Gerald tion, Press Y. City 10020	
n - Degradation, ips) Eye Gate I-C-E RMC	
nutes, Carousal Broadway, New	
is People, 30 olor, McGraw - Hill 330 W. 42nd Street, 18	
partment	

CONCEPT			
	An adequate supply of clean air is essential because most organisms depend on oxygen, through respiration, to release the energy in their food.	Discipline Area	Math
		Subject	Geo
		Problem Orientation	

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNIN
Cognitive: The student will determine and record the amount of air needed for his survival. Affective: The student will be alerted to the need for and supply of clean air.	I. Student-Centered in class activity A. Measuring and recording volume of air 1. Determine surface area and volume of your classroom (prism) (length x width x height) 2. Determine the average amount of air per breath, per child, through the use of plastic bags and immersion (volume). This can be tested in one of the following ways: a. Place water in a beaker (half full). Emerge the bag into the water and check the displacement (metric system)
Skills to be learned: Practice in metric systems Computation of area and volume of prisms	

(continued on reverse side)

ESEA Title - 59-70-0135-2 Project I-C-E

upply of clean air is
ause most organisms depend
rough respiration, to
nergy in their food.

Discipline Area Mathematics

Subject Geometry

Problem Orientation Air Grade 6

RAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
tudent will cord the amount c his survival. tudent will e need for and ir.	I. Student-Centered in class activity A. Measuring and recording volume of air 1. Determine surface area and volume of your classroom (prism) (length x width x height) 2. Determine the average amount of air per breath, per child, through the use of plastic bags and immersion (volume). This can be tested in one of the following ways: a. Place water in a beaker (half full). Emerge the bag into the water and check the displacement (metric system)	II. Outside Resource and Community Activities A. Calculate the cubic feet (meters) of area in the students' home. B. Research the average amount of air used by the average adult. C. Investegate the effects of vigorous physical activity on breath per minute.
rned: c systems ea and volume		

(continued on reverse side)

Resource and Reference Materials	Continued and Additional Suggested
Publications: Aylesworth, Thomas G. This Vital Air This Vital Water: Man Environmental Crisis, Ran McNally, 1968, $4.95 Audio-Visual: Air Pollution, Part A Pergamon Publishing Co., Maxwell House, Fairview Park, Elmsford, N.Y., 10523 With Each Breath 29 minutes, color Health Educational Services Box 7283, Albany, N.Y., 12224 Air Pollution; Take a Deep Deadly Breath, 3 parts total 54 minutes, color, free. National Medical Audio-Visual Center Chamblee, Georgia 3005 Community: City Health Department	I. (continued) b. Fill a beaker and place a As the bag is immersed, th beaker and go into the par in the pan (metric system) 3. Determine the average number o available in the room. 4. Calculate the number of breath the room. B. Enrichment: 1. Make allowances for the area o by tables and chairs and other 2. Make allowance for the amount used per breath. 3. Remember you are breathing "use

ted	ence Materials	Continued and Additional Suggested Learning Experiences
a th par em) r o ath a o her t use	.95 o., ew 10523 rvices ., 12224 Deep s total 54 o-Visual Center 5	I. (continued) b. Fill a beaker and place a pan next to the beaker. As the bag is immersed, the water will leave the beaker and go into the pan. Measure the water in the pan (metric system). 3. Determine the average number of breaths per minute, available in the room. 4. Calculate the number of breaths of air available in the room. B. Enrichment: 1. Make allowances for the area of the room occupied by tables and chairs and other fixtures. 2. Make allowance for the amount of oxygen not actually used per breath. 3. Remember you are breathing "used" air to begin with.

CONCEPT: Natural resources are not equally distributed over the earth or over time and greatly affect the geographic conditions and quality of life.

Discipline Area: Mathematics

Subject: Problem Solving

Problem Orientation: Natural Resources

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: The student will differentiate soil formations and their ability to sustain life in a given geographic area. Affective: The student will appreciate all life forms in contrast to the various geographic conditions of the earth.	I. Student-Centered in class Activity A. Differentiate between soil formation and its ability to sustain life. 1. Gather all the soil types you can get around the school grounds (black dirt, gravel, sand, red clay, silt, etc.) 2. Then plant various vegetation (beans or corn) in each soil sample and make certain hypotheses of what is going to happen to plant growth. 3. Then observe plant growth according to a certain time ratio and see how close original hypotheses were. 4. Chart, graph or otherwise record data for comparisons.	II. Outsi Comm A. Ta a a v s w o B. Ha t g t a f a
Skills to be Learned: Research Concluding Hypothesizing Observation Time Ratio		

ESEA Title III - 59-70-0135-2 Project I=C-E

are not

d over the earth

reatly affect the

ons and quality of life.

Discipline Area Mathematics

Subject Problem Solving

Problem Orientation Natural Resources Grade 6

VES	SUGGESTED LEARNING EXPERIENCES	
t will rmations sustain aphic nt will orms in us geo- the earth	I. Student-Centered in class Activity A. Differentiate between soil formation and its ability to sustain life. 1. Gather all the soil types you can get around the school grounds (black dirt, gravel, sand, red clay, silt, etc.) 2. Then plant various vegetation (beans or corn) in each soil sample and make certain hypotheses of what is going to happen to plant growth. 3. Then observe plant growth according to a certain time ratio and see how close original hypotheses were. 4. Chart, graph or otherwise record data for comparisons.	II. Outside Resource and Community Activities A. Take a field trip around surrounding area and compare various vegetation to different soil formations. (See what grows along roadside or bank of river, etc.) B. Have a soil conservationist come in and give a talk on soil types and what vegetation and animal life will be found in these certain areas.

Resource and Reference Materials	Continued and Additi
Publications: The Natural Resources of Wisconsin (or any other state) The National Resources Committee of State Agencies (Madison, Wisconson 1956) Audio-Visual: Why plants Grow Where They Do color, 11 minutes, Coronet Our Natural Resources, color 11 minutes, BAVI Community: Get a local Conservationist to talk with students	

iti	Reference Materials	Continued and Additional Suggested Learning Experiences
	: Resources of : any other state) Resources Committee ncies , Wisconson 1956)	
	: ow Where They Do nutes, Coronet Resources, color BAVI	
	Conservationist students	

CONCEPT

7. Factors such as facilitating transportation, economic conditions, population growth, and increased leisure time have a great influence on changes in land use and centers of population density.

Discipline Area: Mathematics

Subject: Percent

Problem Orientation: Changes in Leisure Time

Project I-C-H

ESEA Title III - 59-70-0135-2

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES
Cognitive: The student will compare (using the percent of change type of problem) use of time, land, population density today with use of same during student's grandparents' time. Affective: The student will see the importance and seek the opportunity of being able to use and influence others in use of time, land, resources.	I. Student-Centered in class activity A. Using data and information collected in outside resource activity at right, student will compare (by percent of change) such changes as: 1. Length of working day (hours) 2. Length of vacations (days or weeks) 3. Amount of money earned per day (dollars) 4. Size of community in areas (blocks) 5. Size of community by population (numbers) B. Use information given by DNR representative to find percent of change in amount of land use for public recreation.
Skills to be learned: Interviewing Collecting Information Comparing	

II. Outs
Comm

A. I
i
a
e
c
m
p
r
u
a
v

B. I
t
a
t
q
a

uch as facilitating trans-
conomic conditions, popula-
and increased leisure

Discipline Area Mathematics

Subject Percent

Problem Orientation Changes in Leisure Time Grade 6

creat influence on changes in
centers of population density.

BJECTIVES	SUGGESTED LEARNING EXPERIENCES	
student will the percent of problem) use of pulation density of same during dparents' time. student will see and seek the being able to nce others in and, resources.	I. Student-Centered in class activity A. Using data and information collected in outside resource activity at right, student will compare (by percent of change) such changes as: 1. Length of working day (hours) 2. Length of vacations (days or weeks) 3. Amount of money earned per day (dollars) 4. Size of community in areas (blocks) 5. Size of community by population (numbers) B. Use information given by DNR representative to find percent of change in amount of land use for public recreation.	II. Outside Resource and Community Activities A. Each student will interview his parent and grandparent or elderly neighbor to collect data and information to use in showing percent of change in regard to items to be used in class activity at left. Specific interview questions might be: 1. How many hours per day did you work? 2. How many days/weeks vacation did you get? 3. How much were you paid per day? B. Invite DNR, local tourist trade owner, local soil agent, forester, etc., to talk to class and give information as to amount of public land (continued on reverse)
earned: ormation		

Resource and Reference Materials	Continued and Additional Suggested Le
Publications: Bernarde, Melvin A. Our Precarious Habitat, W. W. Norton and Co., Inc., N.Y., 1970 Ehrlich, Paul R., The Population Bomb, Ballantine Books, N.Y., 1968 Audio-Visual: The Squeeze, Mass Media Ministries, 2116 North Charles Street, Baltimore, Maryland 21218 #4278 Cities are Different and Alike, color, 11 minutes, $4.75, BAVI #0884 Cities -- How They Grow, 2nd Edition, 11 minutes, $2.00, BAVI Community: DNR Representative Tourist - Resort owner or business man Soil Agent (County) Forest Ranger Curator of city or county park	II. (continued) available for recreational use and 1,2,5,10 years ago.

Le	eference Materials	Continued and Additional Suggested Learning Experiences
se	A. Our at, W. W. Norton .Y., 1970 , The Population Books, N.Y., 1968 s Media Ministries, es Street, and 21218 Different and Alike, s, $4.75, BAVI How They Grow, 2nd tes, $2.00, BAVI ve owner or bus- ty) or county park	II. (continued) available for recreational use today and 1,2,5,10 years ago.

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT: Factors such as facilitating transportation, economic conditions, population growth, and increased leisure time have a great influence on changes in land use and centers of population density.

Discipline Area: Mathematics

Subject: Percent

Problem Orientation: Influence for Cha

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCE	
Cognitive: The student will use simple percentage to find and express change in land use and changes in centers of population density. Affective: The student will become aware of changes in land use and population density in his own area or community. He will recognize the need for proper planning and laws regulating change.	I. Student-Centered in class Activity A. Using local voter registration figures, student will show % of increase or decrease in voter population. B. Using school enrollment figures compute and show % of increase or decrease in school population from one year or period to another. C. Using USDA figures in land use change (acres or square miles) use percent in expressing land use change (i.e., "urban sprawl" - vs - corn fields.) D. Use data given in class by guest speakers to find percent of change.	II. Outsi Commu A. In Su to on cha tha B. Inv or cla met inv men pop C. Inv tal in use ing D. Inv to E. Inv to
Skills to be Learned: Observation Investigation Research Comparing Reporting Reflection Making judgements Establishing Conclusions		

facilitating trans-

mic conditions, pop-

and increased leisure

t influence on changes in land

of population density.

Discipline Area Mathematics

Subject Percent

Problem Orientation Influence for Change Grade 6

NCE	CTIVES	SUGGESTED LEARNING EXPERIENCES	
tsi mmu In Su to on cha tha Inv or cla met inv men pop	tudent will use e to find and n land use and rs of popula- tudent will changes in pulation own area or will recognize pper planning ing change.	I. Student-Centered in class Activity A. Using local voter registration figures, student will show % of increase or decrease in voter population. B. Using school enrollment figures compute and show % of increase or decrease in school population from one year or period to another. C. Using USDA figures in land use change (acres or square miles) use percent in expressing land use change (i.e., "urban sprawl" - vs - corn fields.) D. Use data given in class by guest speakers to find percent of change.	II. Ou de Resource and Community Activities A. Invite Principle or Superintendent of schools to give a talk to class on school enrollment changes and problems that have resulted. B. Invite Chief of Police or Sheriff to talk to class on changes in methods or problems involving law enforcement resulting from population change. C. Invite County Agent to talk to class on change in local county land use and problems resulting from these changes. D. Invite Farmer to speak to class. E. Invite and Industrialist to speak to class.
	arned: ts nclusions		

Resource and Reference Materials	Continued and Additional Learning Expe
Publications:	
A Different Kind of Country 2nd Ed., Wiley, 1968	
Statistical Abstracts from school libraries	
U.S. Government Printing Office reprints	
Audio-Visual:	
People, Our Most Valuable Resource, McGraw - Hill Co.	
The City and The Future, Sterling Educational Films	
All Kinds of People, 13 minutes, $5, color #3999 BAVI	
Community:	
Farmer Industrialist Police Department Principle or Superintendent of Schools	

Expe	ence Materials	Continued and Additional Learning Experiences
	of Country 68	
	cts from	
	inting Office	
	aluable Resource,	
	uture, nal Films	
	e, 13 minutes, VI	
	intendent	

ESEA Title III - 59-70-0135-1 Project I-C-E

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

Discipline Area: Mathematics

Subject: Graphs

Problem Orientation: Littering

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: The student will estimate long-range effect of litter on current data, portraying it in graph form. Affective: The student will suggest ways of improving the litter problem in his community. . . .	I. Student-Centered in class activity A. Litter in the Classroom 1. Dispense with janitorial services in the classroom for a period of time (at least 1 week). Note the day to day accumulation of scrap paper, pencil shavings, paper towels, etc. 2. List and graph different types of refuse accumulated from day to day. 3. Estimate yearly accumulation. B. Discussion: 1. Do students feel that the money spent to	II. Out Com A.
Skills to be learned: Graphing Estimation (over a long range period based on knowledge of present information.		

(continued on reverse side)

(con

economic, social, and

tors determine status

es and attitudes

vironment.

Discipline Area Mathematics

Subject Graphs

Problem Orientation Littering Grade 6

BJECTIVES	SUGGESTED LEARNING EXPERIENCES	
e student will -range effect current data, in graph form. e student will of improving oblem in his	I. Student-Centered in class activity A. Litter in the Classroom 1. Dispense with janitorial services in the classroom for a period of time (at least 1 week). Note the day to day accumulation of scrap paper, pencil shavings, paper towels, etc. 2. List and graph different types of refuse accumulated from day to day. 3. Estimate yearly accumulation. B. Discussion: 1. Do students feel that the money spent to (continued on reverse side)	II. Outside Resource and Community Activities A. Investigation of littering in the community. 1. Have children stand for about 30 minutes of a busy hour near a store, restaurant, or garage and tally the litter dropped or thrown by passers-by. List according to types of litter and make a graph depicting the results. 2. In class activity to follow exercise No. 1: Our community has a ($50) fine for littering. How much money would have been collected "yesterday" in just our neighborhood if that law were (continued on reverse side)
learned: ver a long based on know- ent infor-		

Resource and Reference Materials

Publications:

Pringle, Laurence, The Only Earth We Have, Mac Millan Company, 866 Third Avenue, New York City, N.Y. 10022, $4.50

Man's Control of the Environment, Congressional Quarterly 1970 #1604A I-C-E RMC

Audio-Visual:

House of Man - Our Changing Environment, 17 minute, color, Encyclopedia Britanica Educational Corp., 425 N. Michigan Ave., Chicago, Ill., 60611

Our Vanishing Land, Mc Graw - Hill Contemporary Films, 330 W. 42nd Street, New York, N.y. 10018

Community:

Community or County Department which collects litter or refuse.

Continued and Additional S

I. (continued)

1. salary the custod

2. What would happe crews or custodia to clean up "behi

II. (continued)

2. enforced. Have st individual totals final class total appreciation of t littering. Have of taxpayers for to businessmen, e

Reference Materials	Continued and Additional Suggested Learning Experiences
	I. (continued)
e, The Only Earth We Company, 866 Third City, N.Y. 10022,	1. salary the custodian is well spent? 2. What would happen if there were no highway crews or custodians, or sanitation workers to clean up "behind us"?
the Environment, arterly 1970 C	
	II. (continued)
ur Changing minute, color, tanica Educational chigan Ave., 0611	2. enforced. Have students figure their individual totals; help them compile a final class total. Lead children to an appreciation of the economic effects of littering. Have them consider the cost of taxpayers for streetcleaning, the cost to businessmen, etc.
nd, Mc Graw - y Films, 330 W. York, N.y. 10018	
nty Department litter or refuse.	

CONCEPT

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

Discipline Are

Subject

Problem Orient

BEHAVIORAL OBJECTIVES	SUGGESTED
Cognitive: The student will identify and list the effects of varying concentrations of salt on native vegetation. Affective: The student will realize and appreciate the ability that man has to change and manipulate his environment and recognize the inherent danger of that practice.	I. Student-Cente class activit A. Salt effec vegetation 1. The stu construc rariums boxes) a them wi vegetati 2. Maintai terrariu equal a water a for abou a. It wi essar measu amoun water expos sun, mate and a veget each
Skills to be learned: Observing Recording Measuring (dimension and liquid)	

(continued on rev

ESEA Title III - 59-70-0135-2 Project I-C-E

e ability to manage, Discipline Area Mathematics

r'd change his environment. Subject Measurement

Problem Orientation Management of Roads and adjacent lands Grade 6

BJECTIVES

student will identify ffects of varying of salt on native

e student will realize the ability that man and manipulate his envi- cognize the inherent practice.

earned:

ension and uid)

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

A. Salt effects on vegetation.

1. The students will construct 4 terrariums (window boxes) and fill them with native vegetation.
2. Maintain the terrariums with equal amounts of water and sunlight for about ten days
   a. It will be necessary to measure equal amounts of water, soil, exposure to the sun, and estimate the type and amount of vegetation in each box.

(continued on reverse side)

II. Outside Resource and Community Activities

A. Take a field trip and observe the amount and type of vegetation along a road that is salted throughout the winter and one that received no salt treatment.

B. Find out how much salt the county uses on roads during the month of February. Calculate the cost.

C. Research the effect of excess amounts of salt on small game.

Resource and Reference Materials	Continued and Additional Suggested Le
Publications: Anderson, Edgar, Plants, Man and Life, University of California Berkeley, 1967 Dasmann, Raymond F., A Different Kind of Country, Mac Millan, 1968 Audio-Visual: Ecology and Man Series - Set #3 FS ST11 I-C-E RMC Community: County Department of Highways	I. (continued) 3. Introduce a strong solution box #1, a weaker solution salt into boxes #3 and #4. 4. Maintain a salting procedur ten days and carefully obse progress of all four boxes. 5. Salt solution must be caref insure constant dosage. 6. Conduct an experiment showi effects of salt on ice. Su science or social studies c

ce Materials	Continued and Additional Suggested Learning Experiences
s, Man and alifornia Different illan, 1968 - Set #3 ighways	I. (continued) 3. Introduce a strong solution of salt water into box #1, a weaker solution into box #2, and no salt into boxes #3 and #4. 4. Maintain a salting procedure for an additional ten days and carefully observe and record the progress of all four boxes. 5. Salt solution must be carefully measured to insure constant dosage. 6. Conduct an experiment showing the physiological effects of salt on ice. Suggest integration with science or social studies classes.

ESEA Title III - 59-70-0135-2 Project I-C-E

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

Discipline Area: Mathematics

Subject: Decimal Fra

Problem Orientation: Short-t fac

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXP
Cognitive: The student will determine by decimal fractions the dollar value of environmental clean-up. Affective: The student will question and evaluate short-term gains to environmental losses.	I. Student-Centered in class activity A. Related class and community activities. 1. In a class discussion, set dollar values on the cost of discarding of cars, bottles, can, garbage, etc. (Estimate using decimal fractions) 2. Are there economic gains which bring about environmental losses with respect to trash on the city and country lands? 3. Is it worth the cost of removing cans and cars at public expense to have desirable environmental conditions? 4. Reports of computations made in the various activities
Skills to be Learned: Gathering Data Reporting Comparing	

erm economic gains may

long-term environment-

es.

Discipline Area Mathematics

Subject Decimal Fractions

Problem Orientation Short-Long term factors

Grade 6 -

OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
The student will by decimal fractions value of environ- n-up. The student will d evaluate short- to environmental	I. Student-Centered in class activity A. Related class and community activities. 1. In a class discussion, set dollar values on the cost of discarding of cars, bottles, can, garbage, etc. (Estimate using decimal fractions). 2. Are there economic gains which bring about environmental losses with respect to trash on the city and country lands? 3. Is it worth the cost of removing cans and cars at public expense to have desirable environmental conditions? 4. Reports of computations made in the various activities	II. Outside Resource and Community Activities A. Class visit to the County Highway Department to check on the cost of picking up cans and bottles in the ditches. B. Class visit to sanitary department or sanitary land fill site and talk with officials to get cost of disposing of cans or bottles. C. Class visit to County Police Department to find the cost of towing away abandoned cars to junkyards and finding the net loss in terms of dollars in getting the environment cleaned up. D. After field trips compare the actual costs to the class estimations.

e Learned:

Data

Resource and Reference Materials	Continued and Additional Suggested
Publications: Stewardship - The Land - The Land Owner - The Metropolis, New York Open Space Institute, Inc., 1968 Inherit the Earth: Man On An Aging Planet, Dodd, 1966 Audio-Visual: #6366 - What's Happening to Our Landscape ?, 20 minutes, color $2, BAVI #6878 - Land Betrayed, 10 minutes, color, $3.75, BAVI Community: County Highway Department Sanitation Department County Police Department	

ted	ence Materials	Continued and Additional Suggested Learning Experiences
	nd - The Land is, New York , Inc., 1968	
	Man On An Aging	
	ning to Our nutes, color	
	d, 10 minutes,	
	tment t ment	

ESEA TITLE III - 59-70-0135-2 Project I-C-E

CONCEPT: II. Individual acts, duplicated or compounded, produce significant environmental alterations over time.

Discipline Area: Mathemat

Subject: Estimati

Problem Orientation: Indiv bility/Sc

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EX
Cognitive: The student will explain data presented in graphs and construct graphs to summarize data. Affective: The student will pick up litter on the school facilities and place it in a proper container.	I. Student-Centered in class activity After outside activity: A. Write the estimates on the chalkboard and have children make bar or line graphs or pictographs to show the incidence of certain types o litter on the playground 1. How much of it was biodegradable? 2. Can they imagine the amounts of litter on all of the playground in the community? in the state? in the country? in the world 3. Can some of the types of litter be called pollutants? What Kinds B. Have children collect the litter in their yards or on their block, estimate the incidence of certain
Skills to be Learned: Estimating Graphing Problem Solving Drawing Conclusions	

(continued on reverse side)

l acts, duplicated

, produce significant

alterations over

Discipline Area . Mathematics

Subject · Estimation - Graphs

Problem Orientation Individual Responsibility/Solid Waste Disposal

Grade 6

EX	ECTIVES	SUGGESTED LEARNING EXPERIENCES	
	e student will presented in nstruct graphs data. e student will r on the school d place it in a ner.	I. Student-Centered in class activity After outside activity: A. Write the estimates on the chalkboard and have children make bar or line graphs or pictographs to show the incidence of certain types of litter on the playground. 1. How much of it was biodegradable? 2. Can they imagine the amounts of litter on all of the playgrounds in the community? in the state? in the country? in the world? 3. Can some of the types of litter be called pollutants? What Kinds? B. Have children collect the litter in their yards or on their block, estimate the incidence of certain	II. Outside Resource and Community Activities A. Take a "litter walk" around the school playground. Give each group a large bag and designate areas to be covered. Give one child a separate bag and a large magnet to "sweep" the area and probe into sidewalk or asphalt cracks for metals. B. Still outdoors have the children empty the bags and sort the contents. Estimate the number of pieces of paper, bottles, string, etc., and record the estimates. C. Re-collect the litter and dispose of it.
	Learned: ng usions		

(continued on reverse side)

Resource and Reference Materials	Continued and Additional Suggested Learni
Publications: Benarde, Melvin A., Our Precious Habitat, W. W. Norton and Co., 55 Fifth Ave., N.Y., N.Y. 10003 $2.95 paperback $6.95 hardcover Audio-Visual: Film Strip: Beer Can By The Highway (sound tape) Warren Schloat Productions, Inc., West Nyaak, N.Y. 10994 Community: City or County Street and Highway Department	I. (continued) types and prepare graphs to compare wi done for the school grounds.

ence Materials	Continued and Additional Suggested Learning Experiences
r Precious and Co., Y. 10003	I. (continued) types and prepare graphs to compare with those done for the school grounds.
By The Highway loat Produc- ., N.Y. 10994	
nd Highway	

ESEA Title III - 59-70-0135-2 Project I-C-E

CONCEPT 12. Private ownership must be regarded as a stewardship and should not encroach upon or violate the individual right of others.

Discipline Area Mathemat

Subject Multipli

Problem Orientation Snowmo

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERI
Cognitive: The student will predict the consequences of uncontrolled development of "open spaces" and snowmobile trails. Affective: The student will suggest ways of controlling the develcpment of land used for snowmobiling.	I. Student-Centered in class activity A. See attached sheet and formulate problems for class to work. Examples: 1. What is the minimum number of snowmobiles registered June-1971? 2. What is the maximum number of snowmobiles registered June-1971? B. The average amount spent for snowmobiles in 1970 was $1,000. 1. What was the total amount of money spent for the minimal number of snowmobiles registered? 2. What was the total amount spent on the maximum number of snow-mobiles registered?
Skills to be Learned: Large Number Multiplication Interviewing Drawing Conclusions	

(continued on reverse side)

II.

(con

Discipline Area Mathematics

Subject Multiplication

Problem Orientation Snowmobiles Grade 6

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

A. See attached sheet and formulate problems for class to work. Examples:

1. What is the minimum number of snowmobiles registered June-1971?

2. What is the maximum number of snowmobiles registered June-1971?

B. The average amount spent for snowmobiles in 1970 was $1,000.

1. What was the total amount of money spent for the minimal number of snowmobiles registered?

2. What was the total amount spent on the maximum number of snowmobiles registered?

(continued on reverse side)

II. Outside Resource and Community Activities

A. Have the students write to International Snowmobile Industry Association News Release, 5100 Edina Industrial Blvd., Minneapolis, Minn. 55435, c/o Public Relations Department for the number of snowmobiles registered in the U.S. and the total amount of land available for trails and open spaces.

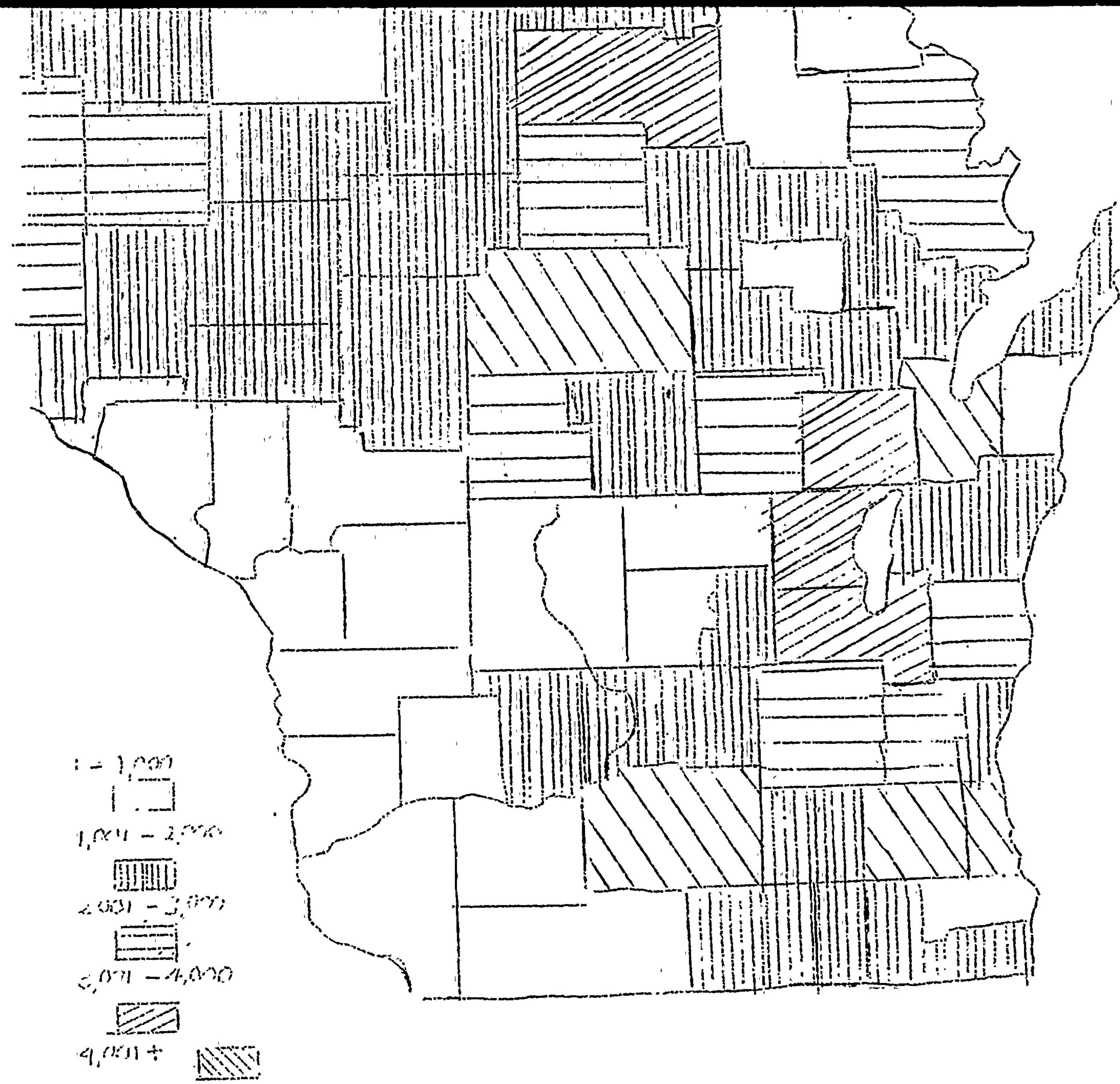
B. Calculate the number of snowmobiles in their community.

C. Have students go out in pairs and make a neighborhood survey. Example questions:
1. What is good about snowmobiling?
2. Do you think snowmobiles are or could be a

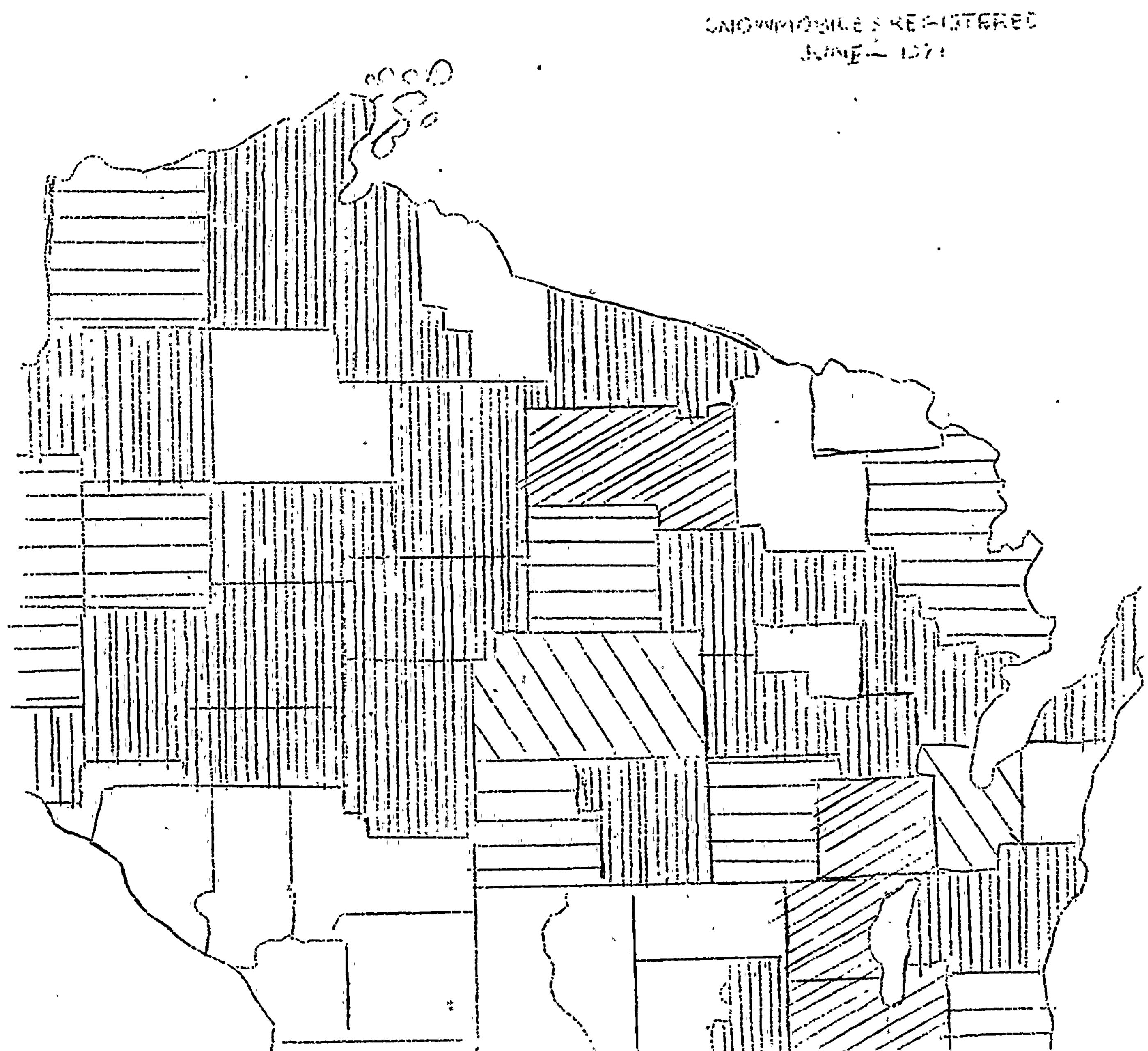
(continued on reverse side)

Resource and Reference Materials	Continued and Additional Suggested Learn
Publications: A Program for Snowmobiling in Wisconsin, DNR, Bureau of Commercial Recreation, Box 405, Madison, Wisconsin 53701 Magazine: National Wildlife, National Wildlife Federation, 534 North Broadway, Milwaukee, Wisconsin 53202, Dec.- Jan. 1972 or I-C-E RIC Audio-Visual: Community: DNR Representative Local Farmers Snowmobile Club County Land Office (Registrar of Deeds)	I. (continued) C. By 1980, $156,377,370 will be nee develop land for snowmobiles in Wi make 421,000 acres for open spaces trails available for snowmobiling. the required needs by 1980, 10,000 must be added costing $38,000,000 of open space must be added costin 1. What is the average amount per trails? 2. What is the average amount per open space? II. (continued) problem? 3. If they are not now, how about kind? 4. What kind of restrictions shou snowmobiles? If any, why? D. Report Findings in class. E. Correlate with Social Studies to advantages of recreation.

Materials	Continued and Additional Suggested Learning Experiences
ing in of Box 405, 01 dlife, ation, waukee, Jan. istrar	I. (continued) C. By 1980, $156,377,370 will be needed to buy and develop land for snowmobiles in Wisconsin. This would make 421,000 acres for open spaces plus many miles of trails available for snowmobiling. In order to meet the required needs by 1980, 10,000 more miles of trails must be added costing $38,000,000 and 127,000 acres of open space must be added costing $120,000,000. 1. What is the average amount per mile for additional trails? 2. What is the average amount per acre for additional open space? II. (continued) problem? 3. If they are not now, how about the future? What kind? 4. What kind of restrictions should be placed on snowmobiles? If any, why? D. Report Findings in class. E. Correlate with Social Studies to discuss the advantages of recreation.



1 - 1,000
1,001 - 2,000
2,001 - 3,000
3,001 - 4,000
4,001 +


SNOWMOBILES REGISTERED
JUNE — 1971

PROJECT I-C-E Episode Evaluation Form (Reproduce or dupli T

Please fill in:
Subject: _____

Grade: _____

Concept No. Used: _____

In commenting on each episode used in y
form. Feel free to adapt it and add more
your critiques and comments - negative an
hand column, please rate (poor, good, exc
make specific comments or suggestions if
vided to help us make this a more usable

Poor	Good	Exc.	
			I. Behavioral Objectives A. Cognitive:
			B. Affective:
			II. Skills Developed
			III. Suggested Learning Experiences A. In Class:
			B. Outside & Community Activities:
			IV. Suggested Resource & Reference Materials (specific suggestions & comments)

Se

T I-C-E Episode Evaluation Form (Reproduce or duplicate as needed)

In commenting on each episode used in your class, please use this form. Feel free to adapt it and add more pages. Let us know all your critiques and comments - negative and positive. In the left-hand column, please rate (poor, good, excellent) each item. Also, make specific comments or suggestions if possible in the space provided to help us make this a more usable guide. Thank you.

. Behavioral Objectives
A. Cognitive:

B. Affective:

. Skills Developed

. Suggested Learning Experiences
A. In Class:

B. Outside & Community Activities:

V. Suggested Resource & Reference Materials
(specific suggestions & comments)

Project I-C-E
Serving Schools in CESA 3-8-9
1927 Main Street
Green Bay, WI 54301

ESEA Title III - 59-70-0135-2 Project I-C-E

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

Discipline Area: Mathematics

Subject: Measurement

Problem Orientation: Management o and adjacent

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIEN
Cognitive: The student will identify and list the effects of varying concentrations of salt on native vegetation. Affective: The student will realize and appreciate the ability that man has to change and manipulate his environment and recognize the inherent danger of that practice. Skills to be learned: Observing Recording Measuring (dimension and liquid)	I. Student-Centered in class activity A. Salt effects on vegetation. 1. The students will construct 4 terrariums (window boxes) and fill them with native vegetation. 2. Maintain the terrariums with equal amounts of water and sunlight for about ten days a. It will be necessary to measure equal amounts of water, soil, exposure to the sun, and estimate the type and amount of vegetation in each box.

(continued on reverse side)

II. C C A B C

ne Area Mathematics

Measurement

Orientation Management of Reads and adjacent lands Grade 6

GESTED LEARNING EXPERIENCES

-Centered in
ctivity

effects on
tation.

he students will
onstruct 4 ter-
ariums (window
oxes) and fill
hem with native
egetation.
aintain the
errariums with
qual amounts of
ater and sunlight
or about ten days
. It will be nec-
essary to
measure equal
amounts of
water, soil,
exposure to the
sun, and esti-
mate the type
and amount of
vegetation in
each box.
on reverse side)

II. Outside Resource and Community Activities

A. Take a field trip and observe the amount and type of vegetation along a road that is salted throughout the winter and one that received no salt treatment.

B. Find out how much salt the county uses on roads during the month of February. Calculate the cost.

C. Research the effect of excess amounts of salt on small game.

Resource and Reference Materials	Continued and Additional Suggested Learn
Publications: Anderson, Edgar, Plants, Man and Life, University of California Berkeley, 1967 Dasmann, Raymond F., A Different Kind of Country, Mac Millan, 1968 Audio-Visual: Ecology and Man Series - Set #3 FS ST11 I-C-E RMC Community: County Department of Highways	I. (continued) 3. Introduce a strong solution of box #1, a weaker solution int salt into boxes #3 and #4. 4. Maintain a salting procedure f ten days and carefully observe progress of all four boxes. 5. Salt solution must be carefull insure constant dosage. 6. Conduct an experiment showing t effects of salt on ice. Sugges science or social studies class

Reference Materials	Continued and Additional Suggested Learning Experiences
:, Plants, Man and ity of California nd F., A Different , Mac Millan, 1968 n Series - Set #3 RMC e.t of Highways	I. (continued) 3. Introduce a strong solution of salt water into box #1, a weaker solution into box #2, and no salt into boxes #3 and #4. 4. Maintain a salting procedure for an additional ten days and carefully observe and record the progress of all four boxes. 5. Salt solution must be carefully measured to insure constant dosage. 6. Conduct an experiment showing the physiological effects of salt on ice. Suggest integration with science or social studies classes.

ESEA Title III - 59-70-0135-2 Project I-C-E

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

Discipline Area: Mathematics

Subject: Decimal Fractions

Problem Orientation: Short-Long te[rm] factors

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCE	
Cognitive: The student will determine by decimal fractions the dollar value of environmental clean-up. Affective: The student will question and evaluate short-term gains to environmental losses.	I. Student-Centered in class activity A. Related class and community activities. 1. In a class discussion, set dollar values on the cost of discarding of cars, bottles, can, garbage, etc. (Estimate using decimal fractions). 2. Are there economic gains which bring about environmental losses with respect to trash on the city and country lands? 3. Is it worth the cost of removing cans and cars at public expense to have desirable environmental conditions? 4. Reports of computations made in the various activities	II. Oc Co A. B. C. D.
Skills to be Learned: Gathering Data Reporting Comparing		

nomic gains may

erm environment-

Discipline Area Mathematics

Subject Decimal Fractions

Problem Orientation Short-Long term factors

Grade 6

VES	SUGGESTED LEARNING EXPERIENCES
udent will al fractions f environ- udent will iate short- ronmental	I. Student-Centered in class activity A. Related class and community activities. 1. In a class discussion, set dollar values on the cost of discarding of cars, bottles, can, garbage, etc. (Estimate using decimal fractions). 2. Are there economic gains which bring about environmental losses with respect to trash on the city and country lands? 3. Is it worth the cost of removing cans and cars at public expense to have desirable environmental conditions? 4. Reports of computations made in the various activities
ned:	II. Outside Resource and Community Activities A. Class visit to the County Highway Department to check on the cost of picking up cans and bottles in the ditches. B. Class visit to sanitary department or sanitary land fill site and talk with officials to get cost of disposing of cans or bottles. C. Class visit to County Police Department to find the cost of towing away abandoned cars to junk-yards and finding the net loss in terms of dollars in getting the environment cleaned up. D. After field trips compare the actual costs to the class estimations.

Resource and Reference Materials	Continued and Additional Suggested
Publications: Stewardship - The Land - The Land Owner - The Metropolis, New York Open Space Institute, Inc., 1968 Inherit the Earth: Man On An Aging Planet, Dodd, 1966 Audio-Visual: #6366 - What's Happening to Our Landscape ?, 20 minutes, color $2, BAVI #6878 - Land Betrayed, 10 minutes, color, $3.75, BAVI Community: County Highway Department Sanitation Department County Police Department	

rence Materials	Continued and Additional Suggested Learning Experiences
and - The Land lis, New York e, Inc., 1968 Man On An Aging	
ening to Our inutes, color	
ed, 10 minutes,	
rtment nt tment	

ESEA TITLE III - 59-70-0135-2 Project I-C-E

THEME: II. Individual acts, duplicated or compounded, produce significant environmental alterations over time.

Discipline Area: Mathematics

Subject: Estimation - G

Problem Orientation: Individual ... bility/Solid Wa...

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENC...
Cognitive: The student will explain data presented in graphs and construct graphs to summarize data. Affective: The student will pick up litter on the school facilities and place it in a proper container. Skills to be Learned: Estimating Graphing Problem Solving Drawing Conclusions	I. Student-Centered in class activity After outside activity: A. Write the estimates on the chalkboard and have children make bar or line graphs or pictographs to show the incidence of certain types of litter on the playground. 1. How much of it was biodegradable? 2. Can they imagine the amounts of litter on all of the playgrounds in the community? in the state? in the country? in the world? 3. Can some of the types of litter be called pollutants? What kinds? B. Have children collect the litter in their yards or on their block, estimate the incidence of certain (continued on reverse side)

II. C... C... A... E... C...

licated

significant

ns over

Discipline Area Mathematics

Subject Estimation - Graphs

Problem Orientation Individual Responsibility/Solid Waste Disposal Grade 6

	SUGGESTED LEARNING EXPERIENCES	
will in graphs will school t in a	I. Student-Centered in class activity After outside activity: A. Write the estimates on the chalkboard and have children make bar or line graphs or pictographs to show the incidence of certain types of litter on the playground. 1. How much of it was biodegradable? 2. Can they imagine the amounts of litter on all of the playgrounds in the community? in the state? in the country? in the world? 3. Can some of the types of litter be called pollutants? What kinds? B. Have children collect the litter in their yards or on their block, estimate the incidence of certain (continued on reverse side)	II. Outside Resource and Community Activities A. Take a "litter walk" around the school playground. Give each group a large bag and designate areas to be covered. Give one child a separate bag and a large magnet to "sweep" the area and probe into sidewalk or asphalt cracks for metals. B. Still outdoors have the children empty the bags and sort the contents. Estimate the number of pieces of paper, bottles, string, etc., and record the estimates. C. Re-collect the litter and dispose of it.

Resource and Reference Materials	Continued and Additional Suggested
Publications: Benarde, Melvin A., Our Precious Habitat, W. W. Norton and Co., 55 Fifth Ave., N.Y., N.Y. 10003 $2.95 paperback $6.95 hardcover Audio-Visual: Film Strip: Beer Can By The Highway (sound tape) Warren Schloat Productions, Inc., West Nyaak, N.Y. 10994 Community: City or County Street and Highway Department	I. (continued) types and prepare graphs to co done for the school grounds.

ference Materials	Continued and Additional Suggested Learning Experiences
	I. (continued)
Our Precious n and Co., N.Y. 10003	types and prepare graphs to compare with those done for the school grounds.
n By The Highway Schloat Produc- aak, N.Y. 10994	
t and Highway	

ESEA Title III - 59-70-0135-2 Project I-C-E

12.

CONCEPT: Private ownership must be regarded as a stewardship and should not encroach upon or violate the individual right of others.

Discipline Area: Mathematics

Subject: Multiplication

Problem Orientation: Snowmobiles

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: The student will predict the consequences of uncontrolled development of "open spaces" and snowmobile trails. Affective: The student will suggest ways of controlling the development of land used for snowmobiling.	I. Student-Centered in class activity A. See attached sheet and formulate problems for class to work. Examples: 1. What is the minimum number of snowmobiles registered June-1971? 2. What is the maximum number of snowmobiles registered June-1971? B. The average amount spent for snowmobiles in 1970 was $1,000. 1. What was the total amount of money spent for the minimal number of snowmobiles registered? 2. What was the total amount spent on the maximum number of snowmobiles registered?	II. Outsi Commu A. Ha In In Re In ea Pu fo mo U.S of tra B. Cal sno com C. Hav pai hoo que 1. 2.
Skills to be Learned: Large Number Multiplication Interviewing Drawing Conclusions	(continued on reverse side)	(continued

garded

not

Discipline Area Mathematics

Subject Multiplication

Problem Orientation Snowmobiles Grade 6

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

A. See attached sheet and formulate problems for class to work. Examples:

1. What is the minimum number of snowmobiles registered June-1971?

2. What is the maximum number of snowmobiles registered June-1971?

B. The average amount spent for snowmobiles in 1970 was $1,000.

1. What was the total amount of money spent for the minimal number of snowmobiles registered?

2. What was the total amount spent on the maximum number of snowmobiles registered?

(continued on reverse side)

II. Outside Resource and Community Activities

A. Have the students write to International Snowmobile Industry Association News Release, 5100 Edina Industrial Blvd., Minneapolis, Minn. 55435, c/o Public Relations Department for the number of snowmobiles registered in the U.S. and the total amount of land available for trails and open spaces.

B. Calculate the number of snowmobiles in their community.

C. Have students go out in pairs and make a neighborhood survey. Example questions:

1. What is good about snowmobiling?

2. Do you think snowmobiles are or could be a

(continued on reverse side)

Resource and Reference Materials	Continued and Additional Suggested Learning
Publications: A Program for Snowmobiling in Wisconsin, DNR, Bureau of Commercial Recreation, Box 405, Madison, Wisconsin 53701 Magazine: National Wildlife, National Wildlife Federation, 534 North Broadway, Milwaukee, Wisconsin 53202, Dec.- Jan. 1972 or I-C-E RIC Audio-Visual: Community: DNR Representative Local Farmers Snowmobile Club County Land Office (Registrar of Deeds)	I. (continued) C. By 1980, $156,377,370 will be needed t develop land for snowmobiles in Wiscon make 421,000 acres for open spaces plu trails available for snowmobiling. In the required needs by 1980, 10,000 mor must be added costing $38,000,000 and of open space must be added costing $1 1. What is the average amount per mile trails? 2. What is the average amount per acre open space? II. (continued) problem? 3. If they are not now, how about the kind? 4. What kind of restrictions should b snowmobiles? If any, why? D. Report Findings in class. E. Correlate with Social Studies to disc advantages of recreation.

	Continued and Additional Suggested Learning Experiences

I. (continued)

C. By 1980, $156,377,370 will be needed to buy and develop land for snowmobiles in Wisconsin. This would make 421,000 acres for open spaces plus many miles of trails available for snowmobiling. In order to meet the required needs by 1980, 10,000 more miles of trails must be added costing $38,000,000 and 127,000 acres of open space must be added costing $120,000,000.

1. What is the average amount per mile for additional trails?
2. What is the average amount per acre for additional open space?

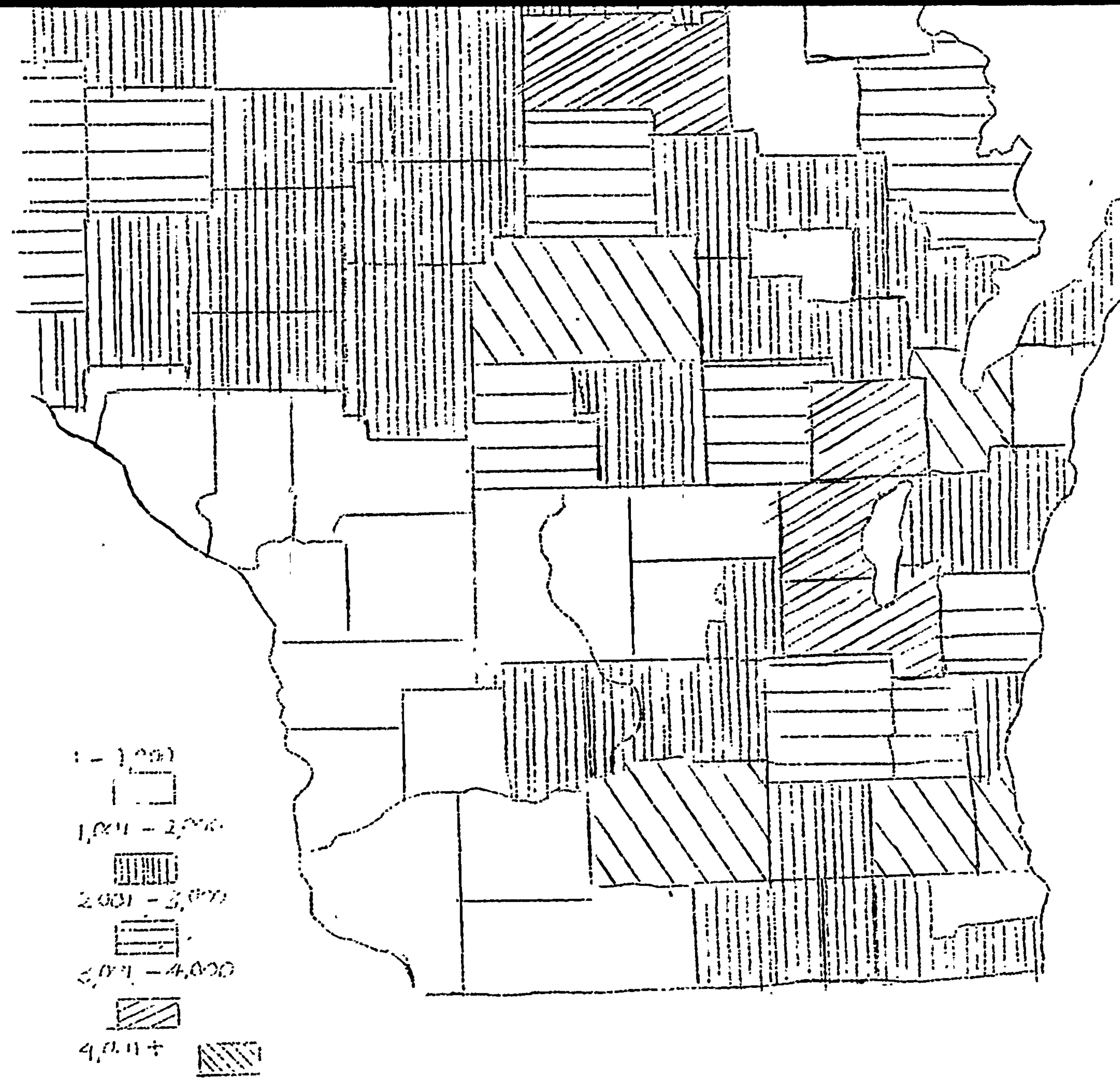
II. (continued)

problem?

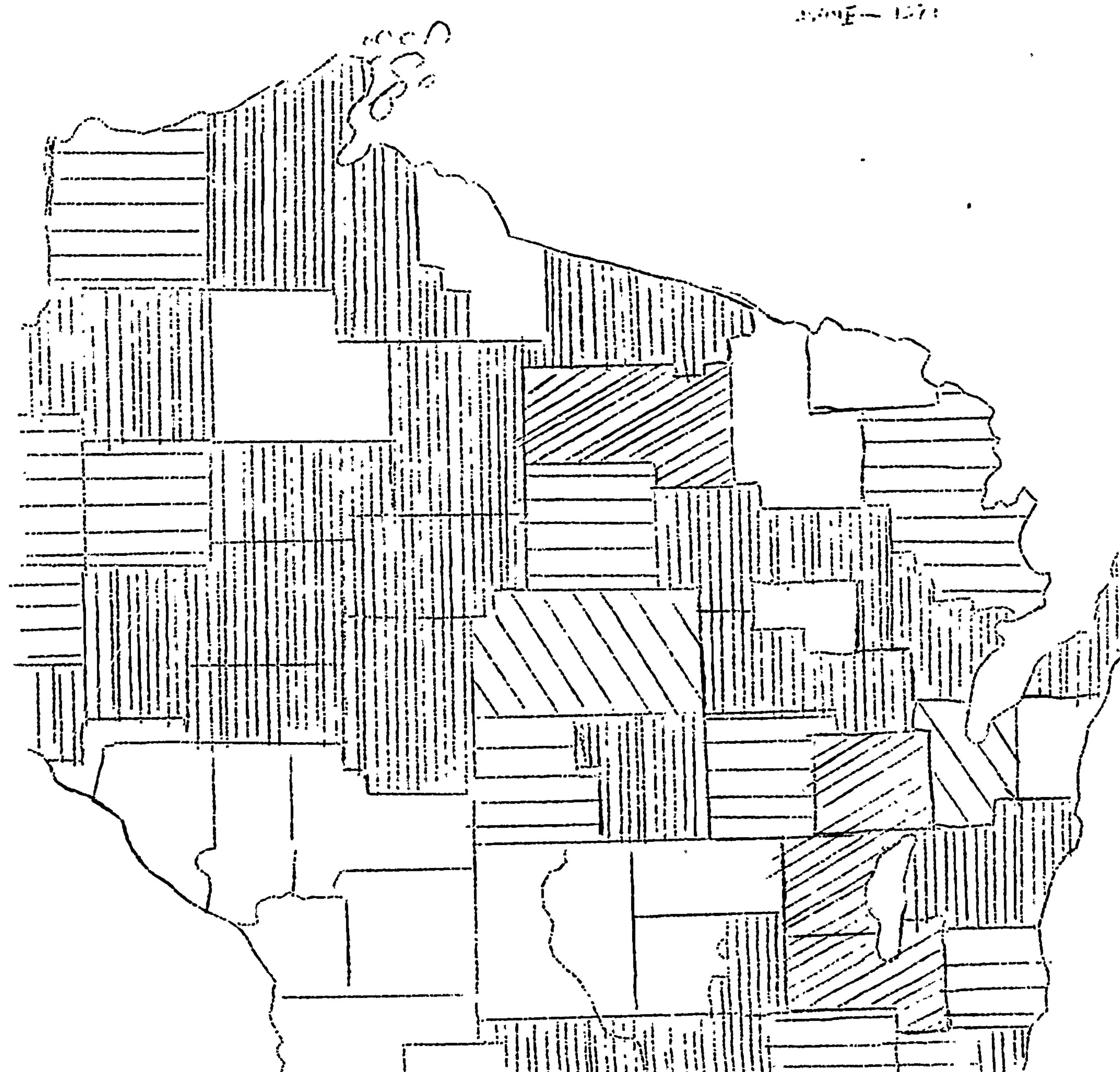
3. If they are not now, how about the future? What kind?
4. What kind of restrictions should be placed on snowmobiles? If any, why?

D. Report Findings in class.

E. Correlate with Social Studies to discuss the advantages of recreation.


1 - 1,000
1,001 - 2,000
2,001 - 3,000
3,001 - 4,000
4,001 +

SNOWMOBILES REGISTERED
JUNE — 1971



PROJECT I-C-E Episode Evaluation Form (Repre

Please fill in:
Subject: _____

Grade: _____

Concept No. Used: _____

In commenting on each epis
form. Feel free to adapt it
your critiques and comments
hand column, please rate (poo
make specific comments or su
vided to help us make this a

Poor	Good	Exc.	
			I. Behavioral Objectives A. Cognitive:
			B. Affective:
			II. Skills Developed
			III. Suggested Learning Experiences A. In Class:
			B. Outside & Community Activities.
			IV. Suggested Resource & Reference Mater (specific suggestions & comments)

isode Evaluation Form (Reproduce or duplicate as needed)

In commenting on each episode used in your class, please use this form. Feel free to adapt it and add more pages. Let us know all your critiques and comments - negative and positive. In the left-hand column, please rate (poor, good, excellent) each item. Also, make specific comments or suggestions if possible in the space provided to help us make this a more usable guide. Thank you.

al Objectives
tive:

tive:

Developed

ed Learning Experiences
Lass:

ide & Community Activities:

ed Resource & Reference Materials
ic suggestions & comments)

Project I-C-E
Serving Schools in CESA 3-8-9
1927 Main Street
Green Bay, WI 54301