

DOCUMENT RESUME

ED 125 853

SE 019 197

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 TITLE Developing Environmental Education Curriculum Material.  
 INSTITUTION Tennessee Valley Authority, Knoxville.  
 PUB DATE Aug 74  
 NOTE 42p.

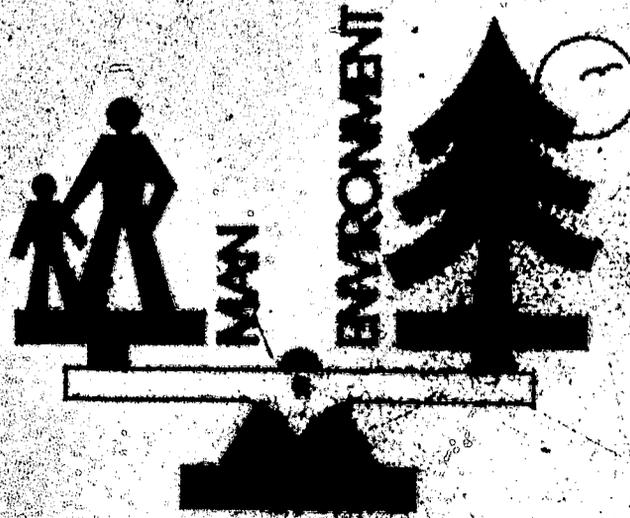
EDRS PRICE MF-\$0.83 HC-\$2.06 Plus Postage.  
 DESCRIPTORS Curriculum Development; \*Curriculum Guides; \*Educational Resources; Elementary Secondary Education; \*Environmental Education; Guidelines; Instructional Materials; \*Reference Materials; \*Resource Guides; Resource Materials

ABSTRACT

This publication is a teacher's guide for developing a curriculum in environmental education. It contains a variety of informational sources to aid teachers in developing their own programs. Information includes additional sources on the subjects of curriculum planning and development and environmental education, as well as suggested curriculum guidelines and a table of contents. Included is a section of selected sources of instructional materials that include the titles and prices of most of the materials and the addresses for ordering them. (MA)

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# DEVELOPING ENVIRONMENTAL EDUCATION CURRICULUM MATERIAL



TENNESSEE VALLEY AUTHORITY

SF 019 197

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August 1974

## DEVELOPING ENVIRONMENTAL EDUCATION CURRICULUM MATERIAL

This paper deals very briefly with curriculum-developing subject or course material on environmental education for students. It has been prepared to serve as a general guide to the teacher.

State departments of education have "rules and regulations" or a "course of study" for local school systems or districts to follow when designing curricula. Rules and regulations address minimum standards for all facets of education, e.g., curriculum, finance, etc. Local systems have considerable flexibility in programming as long as they stay within the legally accepted guidelines of the state. These guidelines should be reviewed carefully as the first step in program development.

Even though all teachers are familiar with the basics of curriculum planning and development, some may want to review selected material on the subject; therefore, a few books are listed in the bibliography.

A second step in developing environmental education curriculum material would be to review the literature to see what now exists. This can be done by looking under the subject area "curriculum," "environmental education," or "conservation education" in *Education Index* and *Books In Print*. *Education Index* is published by:

H. W. Wilson Company  
950 University Avenue  
Bronx, NY 10452

*Books In Print* is published by:

R. R. Bowker Company  
1180 Avenue of the Americas  
New York, NY 10036

Both of these publications are found in major libraries. Additional material is available through the Educational Resources Information Center (ERIC) at:

Educational Resources Information Center (ERIC)  
The Ohio State University  
400 Lincoln Tower  
Columbus, OH 43210

ERIC maintains an excellent collection of environmental education documents on programs funded by HEW and other agencies. Many of the programs of interest will be those funded by HEW under Title III and the Environmental Education Act of 1970. Specific information on these programs may also be obtained by writing HEW direct at:

Commissioner  
Office of Education  
Department of Health, Education, and Welfare  
400 Maryland Avenue, SW.  
Washington, DC 20202

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Suggested sources of environmental education curriculum material are given in the bibliography. Most of these documents are inexpensive or free, and some should be reviewed before preparing new material. Some documents may have local application with only minor changes. Others may be used as enrichment material without making any changes to their contents.

If it is desirable to develop material tailored to fit local needs and resources, this can be easily done by organizing a curriculum writing committee. The committee should include students, teachers representing the various academic disciplines, parents, and community resource people. If money is available, it may be desirable to also employ a consultant. Directors of model programs in the country are available for this. Their names, addresses, and telephone numbers can be obtained during the literature review or from:

Disinger, John F., and Beverly Lee. *A Directory of Projects and Programs in Environmental Education for Elementary and Secondary Schools*, 2nd ed. 1973.  
Educational Resources Information Center (ERIC)  
The Ohio State University  
400 Lincoln Tower  
Columbus, OH 43210

In addition, HEW's Division of Technology and Environmental Education can provide a listing (project titles, names of project directors, addresses, and telephone numbers) of relevant projects funded under the Environmental Education Act of 1970. You may contact:

Director  
Division of Technology and Environmental Education  
Department of Health, Education, and Welfare  
400 Maryland Avenue, SW.  
Washington, DC 20202

Before developing any specific curriculum material, it will be helpful to review the suggested guidelines in appendix A.

An outline depicting some of the topics which should be considered in a comprehensive curriculum guide is given in appendix B.

## APPENDIX A

### SUGGESTED GUIDELINES FOR DEVELOPING ENVIRONMENTAL EDUCATION CURRICULUM OR ENRICHMENT MATERIAL

1. In order to capitalize on past fiscal investments and experiences, materials on existing curricula should be reviewed and utilized when applicable to prevent duplication of efforts and "reinventing the wheel."
2. The laws of nature should be incorporated in the school curriculum at every grade level.
3. Program models for process, content, organization, and presentation should be developed and field tested for both formal and informal education.
4. Special materials should be developed addressing what should be taught about natural laws, cycles or processes, ecological principles, resource utilization, and environmental problems in all disciplines in the curriculum.
5. Educational materials should stress the interrelatedness of environmental problems and include consideration of social, political, and economic implications in formulating solutions to problems.
6. Choice-consequence relationships in decision making should be considered in developing curriculum material.
7. Material should be revised or updated continuously addressing environmental topics of immediate concern at various geographic levels—neighborhood, community, town, county, state, region, nation, and world—as students progress through grades.
8. Full use should be made of community resources (human and physical) in order to make education for students more relevant to real-life situations.
9. Opportunities and experiences for understanding the basic social processes man has developed in the past, for the present, and the future to satisfy his basic needs should be considered very important aspects in curriculum development.
10. Curriculum development should include emphasis on desirable and undesirable individual and group behaviors as related to resource utilization, maintaining balance in natural systems, and survival.
11. Students should be involved in planning their own programs and their needs and interests considered in developing curriculum material.
12. The ultimate goal of curriculum (education, in general) should be to prepare a well-rounded citizen, one who possesses skills and attitudes which foster the use of knowledge for the common good of the people, understands change processes and planned change, and participates actively in shaping society.

## APPENDIX B

### A PROPOSED TABLE OF CONTENTS FOR DEVELOPING A CURRICULUM OR TEACHING AND RESOURCE GUIDE FOR ENVIRONMENTAL EDUCATION

(Kindergarten through Grade 12)

#### SECTION I

Foreword

Environmental Education  
Philosophy and Need  
Definition and Importance

Nonrenewable Resources

Renewable Resources

#### SECTION II

Resource People

State Department of Education, Soil Conservation Service, Game and Fish Commission, Environmental Protection Agency, National Park Service, Forest Service, Tennessee Valley Authority, etc.

Resource Facilities

Describe places, locations, and purposes of field trip. Places will vary according to availability of resource facilities near each school system. Some examples of places to visit are:

Airport	Fur farm
Aquarium	Game farm
Arboretum	Gasoline refinery
Camp	Ghetto
Cave	Greenhouse
Christmas tree farm	Grist mill
City water supply plant	Hospital
Coal mine	Iron and steel plant
Composting plant	Junkyard
Conservation education center	Lake
Convalescent home	Maple sugar camp
Dam	Marsh
Dog pound	Meadow
Electrical generating plant	Museum
Environmental education center	National forest
Fair	Nature center
Farm	Nature preserve
Fire tower	Open dump
Fish hatchery	Outdoor school site

Park  
Planetarium  
Pond  
Railroad yard  
Recycling plant  
Road cut (fossils)  
Rock quarry  
Sanitary landfill  
Sewage disposal plant  
Shopping center  
Stream  
Strip mine

Subdivision development  
Superhighway construction  
Supermarket  
Swamp  
Tree nursery  
Truck garden  
Vocational-Technical school  
Water power plant (hydroelectric)  
Weather station  
Well-managed watershed  
Zoo

### SECTION III

Field Trip Excursion Procedures  
  Appointments  
  Cancellations  
  Transportation  
  Permission for Excursion  
  First Aid Kit

### SECTION IV

Potential Topics of Interest\*

AIR  
ANIMALS  
ENERGY  
HUMAN RESOURCES  
LAND USE  
MINERALS  
NOISE  
PLANTS  
POPULATION  
SOILS  
TRANSPORTATION  
WASTE DISPOSAL  
WATER

Background information should be provided on these potential topics of interest and related to all disciplines within the curriculum. Concept statements and student activities (pretrip, trip, posttrip) should be described. Material should be prepared by grade levels. Teaching outlines may also be included for each potential topic of interest.

### SECTION V

Suggested Environmental Improvement Projects or Activities for Students (individuals and groups) (All grade levels can be included.)

Special Programs and Research Projects for Students (individuals and groups) (All grade levels can be included.)

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\*It might be more appropriate to develop a separate guide on each of these topics of interest.

**SECTION VI**

**Readings and Audio-Visual Aids**  
**Students**  
**Teachers**

**Free and Inexpensive Materials**

**SECTION VII**

**Getting the Most Out of the Field Trip**  
**Equipment To Take Along on the Field Trip**

**SECTION VIII**

**Evaluating the Environmental Education Program**

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211 South Dithridge Street  
Pittsburgh, PA 15213

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Montgomery, AL 36104

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108 Washington Street  
Cumberland, MD 21502

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Washington, DC 20235

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1535 West Jefferson Street  
Phoenix, AZ 85007

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220 Boylston Street  
Chestnut Hill, MA 02167

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Atlanta, GA 30324

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310 402nd Avenue, NE.  
Bellevue, WA 98004

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*Ecology: The Farm*

*Ecology: The Forests and Man*

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Building 8, 845 Fox Meadow Road  
Yorktown Heights, NY 10598

*Environment - A Humanistic Approach* (6th grade)  
*Environmental Education - Three High School English Electives*  
*Environmental Studies - Air - Land - Water* (middle school)  
*Historical and Ecological Study of a River* (middle school)  
*Local Environmental Study* (high school)  
*A Multidisciplinary Environmental Curriculum* (7th grade)  
*Sense Awareness through Environment* (all grades)

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Center for Environmental Learning  
705 Avocado Avenue  
Cocoa, FL 32922

*Consumer Resources Idea Handbook*  
*Human Implications of a Threatened Environment*  
*Teachers Curriculum Guide for Field Ecology*  
*Teachers Environmental Resource Unit: The Automobile*  
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721 Capitol Mall  
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Waynesburg, PA 15370

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Washington, DC 20402

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New Castle, VA 24127

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Princeton, NJ 08540

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414 Fourteenth Street  
Denver, CO 80202

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Post Office Box 820  
Arcadia, FL 33821

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325 South Fifth Street  
Springfield, IL 62706

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Indiana State Department of Public Instruction  
Division of Curriculum  
Tenth Floor, Blue Cross Building  
120 West Market Street  
Indianapolis, IN 46204

*Total Environment Education* (contains guidelines for the development of an environmental education program, instructional objectives for grade levels K-12 and all curriculum areas, and a listing of curriculum resources)

Indianapolis Public Schools  
Division of Curriculum and Supervision  
Education Center  
120 East Walnut  
Indianapolis, IN 46204

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*Outdoor Education: Some Suggestions Useful in Planning*

Institute for Environmental Education  
8911 Euclid Avenue  
Cleveland Heights, OH 44106

*A Curriculum Activities Guide to In-Depth Environmental Studies*  
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Des Moines, IA 50319

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Washington, NC 27889

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*Environmental Science Study Curriculum - Teacher's Handbook*  
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*Water Quality Control*

Kemmerer School District No. One  
Kemmerer, WY 83101

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Kingsport City Schools  
Kingsport, TN 37664

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Lee County Schools  
Environmental Education Center  
2266 Second Street  
Fort Myers, FL 33901

*Beaches in Motion/Interaction and Environmental Change*  
*Downtown/A City in Change*  
*Environmental Concept Unit for the Middle School*  
*Environmental Education Interdisciplinary Concepts and Activities*  
(separate guides available for grades 1-8)  
*Field Studies Planning Guide*  
*Interdisciplinary Environmental Education Units* (separate units available for social studies,  
language arts, science, and math)  
*Little Johnny Raindrop* (a poem on the water cycle with both student booklet and teacher's  
guide)  
*Mud Flat Guide/Producers/Consumers/Decomposers*  
*On Campus Teaching: Activity Guide—Environmental Education, 1974.*  
*Semi-Programmed Approach to Field Teaching: Procedures and Techniques for Writing*  
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Lees Junior College  
Jackson, KY 41825

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1971.

Maine Environmental Education Project  
Intermediate School  
Yarmouth, ME 04096

*The Community Environmental Inventory*, prepared by Dean B. Bennett and Richard  
MacGown, 1971.  
*The Environmental Education Committee*, prepared by Dean B. Bennett and Richard  
MacGown, 1972.  
*Environmental Education Program—Organization and Operation*, prepared by Dean B. Bennett  
and Wesley H. Willink, 1972.  
*Environmental Education Teaching Guide, Grade 6*, prepared by Dean B. Bennett.  
*Handbook—Preservice-Inservice Teacher Environmental Education Program (K-12)*  
*The School Site in Environmental Education* (excellent material to aid development of an  
environmental education program)

Marion Community Schools  
Marion, IN 46952

*Teacher-Student Activity Guide*, interdisciplinary, community-oriented environmental education program for all grade levels.

Martin County Schools  
Environmental Studies Center  
205 South Indian River Drive  
Jensen Beach, FL 33457

*Environmental Studies Center* (a description of an existing program)

Maryville College Environmental Education Center  
Townsend, TN 37882

*A Teacher's Manual for the Cades Cove Environmental Study Area in Great Smoky Mountains National Park*, 1969.

Massachusetts Audubon Society  
Lincoln, MA 01773

*Curriculum Overview for Developing Environmentally Literate Citizens*, developed by Charles E. Roth for the Liberty Council of Schools in cooperation with the Massachusetts Audubon Society, revised 1974.

*Zero in on Environmental Education* (an educational materials catalog)

Menomonie Public Schools  
Project M-E-E (Man-Environment-Education)  
718 North Broadway  
Menomonie, WI 54751

*Teacher's Guide for Use of Environmental Education Supplemental Curriculum Materials*, Grade Levels K-4, 1973.

Metropolitan Nashville-Davidson County Schools  
Nashville, TN 37203

*Outdoor Education Manual for the Nature Resource Center* (teacher's manual for using the Davidson County schools' nature center).

Miami-Dade Junior College  
11011 Southwest 104th Street  
Miami, FL 33156

*Man and Environment*. Robert H. McCabe and R. F. Mines, eds. Published by Prentice-Hall, Inc., Englewood Cliffs, NJ 07632, 1972. (\$4.95)

Michigan Department of Conservation  
Lansing, MI 48926

*Conservation Education and Elementary Grades—Teacher's Manual*

Michigan Department of Natural Resources  
Lansing, MI 48926

*Environmental Education for Intermediate Grades—Teacher's Manual*  
*Environmental Education for Junior High Grades—Teacher's Manual*

Milwaukee Public Schools  
Environmental Education Office  
Room 265, Administration Building  
5225 West Vliet Street  
Post Office Drawer 10K  
Milwaukee, WI 53201

*Art/Environmental Aesthetics*  
*The Elective Program in English/Writers and the Environments*  
*Environmental Chemistry Activities*  
*Environmental Education Activities/English Language Arts Program in the Junior and Senior High Schools*  
*Environmental Education/Home Economics - Seventh Grade*  
*Environmental Education/Mini-Proposal Handbook*  
*Environmental Education/An Overview*  
*Environmental Education Resource Materials Inventory*  
*Junior High Mathematics Activities and Problems in Environmental Education*  
*Senior High Mathematics Activities and Problems in Environmental Education*

Minnesota Department of Natural Resources  
Bureau of Information and Education  
350 Centennial Building  
St. Paul, MN 55101

*Educational Lands Resource Assessment* (designed to encourage the use of outdoor classrooms for environmental studies)

*Environmental Ideas and Ideals Guide* (a brochure containing many project ideas)

*A Guide to Minnesota Environmental Study Areas*

*Learning to Live* (a manual of environmental education activities)

Minnesota Environmental Sciences Foundation, Inc.  
5400 Glenwood Avenue  
Minneapolis, MN 55422,

Teacher's guides available from:

National Wildlife Federation  
Educational Servicing  
1412 16th Street, NW  
Washington, DC 20036

*Brine Shrimp* (w/teacher's guide)  
*Button Bags* (w/teacher's guide)  
*Change in a Small Ecosystem* (teacher's guide)  
*Color and Change* (w/teacher's guide)  
*Contour Mapping* (w/teacher's guide)  
*Difference in Living Things* (teacher's guide)  
*Dirty Air*  
*Fish and Water Temperature* (teacher's guide)  
*Genetic Variation* (teacher's guide)  
*Habitat Study/Transect Study*  
*Liquids and More Liquids*  
*Man's Habitat—The City* (w/teacher's guide)  
*Microclimate—Measuring Techniques*  
*Minnows and Models*  
*Nature's Art* (w/teacher's guide)  
*Nature Hunt* (w/teacher's guide)  
*Oaks, Acorns, Climate, and Squirrels* (teacher's guide)  
*Outdoor Activities* (w/teacher's guide)  
*Pesticides are Perilous*  
*Photography For Kids*  
*Plants in the Classroom* (w/teacher's guide)  
*Plant Puzzles* (w/teacher's guide)  
*Population Growth*  
*Population Sampling*  
*Population Variation*  
*The Rise and Fall of a Yeast Community* (teacher's guide)  
*Salts*  
*Shadows* (w/teacher's guide)  
*Snow and Ice* (w/teacher's guide)  
*Soil Sampling* (w/teacher's guide)  
*Sounds and Silence*  
*Stream Profiles* (w/teacher's guide)  
*Succession in a Micro-Aquarium*  
*Tile Patterns and Graphs* (teacher's guide)  
*Tragedy in the Laundromat*  
*Transect Activities I* (w/teacher's guide)  
*Transect Activities II*

Minnesota Environmental Sciences Foundation, Inc. (continued)

*Trash Is Taking Over*  
*Tree Watching*  
*Troublesome Tail Pipes*  
*Tubs of Tiles*  
*Vacant Lot Studies (w/teacher's guide)*  
*Variation Within a Species*  
*Wind (w/teacher's guide)*

Montana State University  
Department of Chemistry  
Bozeman, MT 59715

*Investigations in Atomic and Nuclear Science*, by John R. Amend, 1969. Nuclear science module in a series of texts for high school level.

Mount Vernon School District No. 320  
314 North Ninth  
Mount Vernon, WA 98273

*Scope and Sequence for Environmental Education*, 1972.

Muir Woods—Point Reyes Natural History Association  
Point Reyes National Seashore  
Point Reyes, CA 94956

*The Strands Walk*, elementary outdoor study (produced in cooperation with the National Park Service's environmental education program)

Muscataine-Scott County School System  
Handicapped Children's Nature Center  
1523 South Fairmont  
Davenport, IA 52802

*Mini-Explorations of Our Environment* (This teacher's guide contains a general overview, guidelines to study, and a list of resource materials.)

National Aeronautics and Space Administration  
Educational Programs  
Office of Public Affairs  
Washington, DC 20546

*Skylab Experiments*, Vol. 3, Materials Science  
Vol. 4, Life Science  
Vol. 5, Astronomy and Space Physics  
Vol. 6, Mechanics  
Vol. 7, Living and Working in Space

National Audubon Society  
1130 Fifth Avenue  
New York, NY 10028

*Manual of Outdoor Conservation Education*, by Joseph J. Shomon, 1963. (\$1.00)  
*A Nature Center for Your Community*, by Joseph J. Shomon, 1963. (\$1.00)  
*A Place to Live* (A teacher's manual and classroom workbook for the elementary level are available.) 1970.  
*Planning a Nature Center*, by Byron L. Ashbaugh, 1966. (\$2.00)  
*Trail Planning and Layout*, by Byron L. Ashbaugh and Raymond J. Kordish, 1971. (\$3.00)  
*Wildlife Habitat Improvement*, by Joseph J. Shomon, Byron L. Ashbaugh, and C. D. Tolman, 1966. (\$2.50)

National Education Association  
1201 Sixteenth Street, NW.  
Washington, DC 20036

*Energy Choices for Now: Saving, Using, Renewing*, an introduction to energy in the environment, 1974. Book for students and a teacher's manual.

*Man and His Environment* (an introduction to using environmental study areas) (\$1.75)

National Science Teachers Association  
1201 Sixteenth Street, NW.  
Washington, DC 20036

Several publications and environmental resources material packets are available including listings of free and low-cost environmental education materials.

National Tuberculosis and  
Respiratory Disease Association  
15 East Twenty-sixth Street  
New York, NY 10010

*Air Pollution Primer*, 1971.

27

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National Wildlife Federation  
1214 Sixteenth Street, NW.  
Washington, DC 20036

*The Environmental Discovery Series* (contains a number of teacher preparation guides to activities for grades K-12, prepared by Minnesota Environmental Sciences Foundation, Inc.; see MESF listing.)

New Hampshire State Department of Education  
Division of Instruction  
Concord, NH 03301

*Environmental Education for New Hampshire Elementary and Secondary Schools*, Curriculum Bulletin No. 1, March 1971.

New Jersey Education Association  
180 West State Street  
Trenton, NJ 08608

*Energy Crisis: A Teacher's Resource Guide*, 1974. Objectives, background content, activities, references, and examples of measuring devices for every classroom use.

New Mexico Department of Education  
Santa Fe, NM 87501

*Environmental Education Manual for New Mexico Teachers*

New Mexico Water Resources Research Institute  
New Mexico State University  
Box 3167  
Las Cruces, NM 88003

*Problems of New Mexico and the Southwest—School Learning Materials on Water*

New York State Education Department/  
The University of the State of New York  
Washington Avenue  
New York, NY 12224

*Environmental Education Instructional Activities—K-6, 7-12*, 1972. (These two books offer an interdisciplinary problem-solving approach to environmental studies.)

*An Environmental Experience*, 1971.

3  
New York State Education Department/  
The University of the State of New York (continued)

*The Environment and Society: Adult Basic Education* People and Cities, 1974. (instructor's manual, worksheets, and filmstrip manual)

*Living Within Our Means: Energy and Scarcity*, Environmental Education Instructional Activities, K-6.

*Outdoor Education for Elementary Schools*, 1970.

North Carolina Department of Public Instruction  
Division of Science Education  
Raleigh, NC 27611

*Environmental Education* (concepts, activities, and bibliography)

*Environmental Education Instructional Units* (separate units covering natural resources, population, and pollution)

*Environmental Education Preservice Preparation for Teachers*

*Environmental Education Problems, Projects, and Exercises (4-10)*

*Environmental Education Strategies for Wise Use of Energy*

*A Guide to Environmental Education Resources*

*Teacher's Guide for Environmental Education*

Nova Schools

Interdisciplinary Environmental Education Project

3600 College Avenue, SW.

Fort Lauderdale, FL 33314

*Guidelines for Curriculum Development - Environmental Education K-12*

Ohio Department of Education  
Superintendent of Public Instruction  
Columbus, OH 43215

*Environmental Learning Experiences* (three guides for grades K-2, 3-4, and 5-6), 1973, prepared by Center for the Development of Environmental Curriculum, Willoughby-Eastlake City Schools, Willoughby, OH 44094.

*Environmental Learning Resources* (an annotated catalog)

Open Lands Project  
53 West Jackson Boulevard  
Chicago, IL 60604

*Environment Education and Your School Site*, by Donn Paul Werling, 1973. (\$3.00)  
Handbook for developing school sites for use in environmental education programs.

3 F. A. Owen Publishing Company  
Dansville, NY 14437

*Nature Study: Facts and Activities*, by Marjorie Seymour, 1961 (revised 1967) Teacher's guide, grades 4-6.

Paducah Public Schools  
Post Office Box 1137  
Tenth & Clark Streets  
Paducah, KY 42001

*Environmental Education, Objectives and Field Activities*, 5th ed., 1974. (\$7.00)

Pennsylvania Department of Education  
Office of Information and Publications  
Post Office Box 911  
Harrisburg, PA 17126

*Environmental Education Games*

*Environmental Education Instructional Activities (K-6)*

*The Environmental Impact of Electrical Power Generation: Nuclear and Fossil* (a minicourse for secondary schools and adult education; both student and teacher guides are available.)

*Environmental Issues and Problems* (air)

*Environmental Issues and Problems* (water)

*A Guidebook to Guidebooks* (an urban environmental education resource book), by Richard Saul Wurman, Howard Brunner, and Nancy Donovan of Group for Environmental Education.

*Guidelines for Environmental Sensitivity*

*Nuclear Science: A High School Course*, 1971, (provides a basic but comprehensive understanding of the atom in the light of modern knowledge); and *Supplementary Materials for Nuclear Science*, 1971.

*P. D. E. Environmental Film Series* (suggests films and provides guidelines for their use)

*Pennsylvania Teaching Guide to Natural Resources Conservation: Curriculum Services Series No. 7* (a guide to conservation activities)

*School Site Development for Conservation and Outdoor Education*

Pennsylvania Department of Health  
Harrisburg, PA 17126

*Air Pollution Experiments for the Science Classroom*

Pennsylvania Region H Planning Staff  
1308 Third Avenue  
Post Office Box 87  
Duncansville, PA 16635

*Naturealm - A Classroom Teaching and Resource Guide in Conservation Education*, by William M. Barnhart, 1968.

Philadelphia School District  
Curriculum Planning and Development  
Twenty-first and Parkway  
Philadelphia, PA 19131

*Human Ecology: An Issue-Centered, Interdisciplinary Curriculum*, 1973.

Plover Books  
Terrace Heights  
Winona, MN 55987

*Teaching Guide for the Plover Books*, by Rodney F. Allen, 1974.

The Population Reference Bureau, Inc.  
1755 Massachusetts Avenue, NW  
Washington, DC 20036

*Options* (a study guide to population and the American future), 1973.

Poudre R-1 School District  
2407 LaPorte Avenue  
Fort Collins, CO 80521

*Environmental Education Project Activity Book* (grades K-12)

Project I-C-E (Instruction-Curriculum-Environment)  
1927 Main Street  
Green Bay, WI 54301

A series of environmental education guides is available for these areas:

- Agriculture*, 9-12 (1 book)
- Art*, 4-6 (1 book)
- Business Education*, 9-12 (1 book)
- Fine Arts*, K-6, 7-9, 10-12 (3 booklets)
- Health and Physical Education*, K-6, 7-9, 10-12 (3 booklets)
- Home Economics*, 7-12 (1 book)
- Industrial Arts*, 7-12 (1 book)
- Language Arts*, K-12 (13 booklets)
- Mathematics*, K-12 (13 booklets)
- Science*, K-12 (13 booklets)
- Social Science*, K-12 (13 booklets)

Purdue University  
Natural Resource and Environmental  
Science Program  
Entomology Hall  
Lafayette, IN 47905

*Environmental Education for the Seventies*

Rodale Press, Inc.  
Educational Services Division  
Emmanus, PA 18049

*Recycling* (an interdisciplinary approach to environmental education), by Thomas Fegely, Rita Reemer, and Lynn Miller Rinehart, 1973.

*Teaching Science with Garbage*, by Albert Schatz and Vivian Schatz, 1971.

*Teaching Science with Soil*, by Albert Schatz, 1972.

Interdisciplinary teaching aids and other environmental education materials are available for grades K-9. A brochure describing these materials is available free of charge.

St. Bethlehem School  
Route 8  
Clarksville, TN 37040

*That Which Can Best Be Taught Outdoors* (an outdoor education guide for grades 1-6)

St. Martin Parish School Board  
Environmental Program  
Post Office Box 230  
St. Martinville, LA 70582

*Environmental Education Curriculum Development for Grade 6*  
*Environmental Education Curriculum Development for Grade 8* (contains units on ecology, earth materials, air, water, wildlife, solid waste, pesticides, etc.)

St. Vrain Valley Public Schools  
395 South Pratt Parkway  
Longmont, CO 80501

*Environmental Discovery School*, student manual.

Santa Barbara School Districts  
Career Education Projects  
309 Princeton Avenue  
Santa Barbara, CA 93111

*Energy and Careers for Tomorrow*, by Len Mooy and Don Stillman, 1974. (Career Education Concept Series, elementary grade level) (\$1.00)

Santee School District  
Post Office Box 220  
Santee, CA 92071

*Environmental Education . . . A Teacher's Guide with Inquiry and Value Seeking Strategies*, by Julianna M. Hamann, 1973.

Saskatchewan Natural History Society  
Box 1121  
Regina, Saskatchewan  
Canada

*How To Conduct a Nature Study Group*, by Joyce Deutscher, 1964

P. A. Schiller and Associates  
Post Office Box 307  
Chicago, IL 60690

*Inexpensive Environmental Teaching Units* (contains descriptions of the 54 environmental education investigations for elementary students which are available)

Scientists' Institute for Public Information  
30 East Sixty-eighth Street  
New York, NY 10021

*Environmental Cost of Electric Power*, Environmental Workbook in SIPI series, by Dean E. Abrahamson.

*Environmental Education: 1970*, by Everett M. Hafner, John M. Fowler, and Curtis A. Williams. (Workbook for undergraduate studies in environmental science) (\$1.00)

Seattle City Light Company  
City Light Building  
1015 Third Avenue  
Seattle, WA 98104

*Power Generation Alternatives*, 1972. (\$5.00)

Shawnee Mission Public Schools  
Project CLEAN  
7235 Antioch  
Shawnee Mission, KS 66204

*Curriculum Catalog/Cooperative Learning through Environmental Activities in Nature 1971-1973* (contains descriptions of the 123 modules available which cover grades K-12 and Special Education in all curriculum areas)

Sierra Club  
San Francisco Bay Chapter  
1050 Mills Tower  
220 Bush Street  
San Francisco, CA 94104

*How To Teach Wilderness Conservation*, Thelma Carder, ed., 1968.

Silver Burdett Company  
Morristown, NJ 07960

*Adventures in Environment* (a series which contains a classroom book, outdoor book, and teacher's guide).

Simon Lake School  
Milford, CT 06460

*Pollution - A Teaching*, three activity units for middle and upper grades.

The Society for Environmental Stabilization  
Post Office Box 252  
Fayetteville, AR 72701

*This Is The World We Live In*, (felt-board program—children's environmental education)

Soil Conservation Society of America  
7515 Northeast Ankeny Road  
Ankeny, IA 50021

*Environmental Quality and the Citizen* (a teaching guide for adult education courses related to the environment) (\$2.00) By Bernard L. Clausen and Ross L. Iverson.

*Planning and Organizing an Adult Environmental Education Program.* (\$2.00)

Southeastern Pennsylvania Outdoor Education Center  
Sycamore Mills Road  
Media, PA 19063

Series of outdoor activities.

Southern Connecticut State College  
New Haven, CT 06515

*Scientific Experiments in Environmental Pollution*, 1968.

Springfield Public Schools  
Environmental Center for Our Schools  
195 State Street  
Springfield, MA 01103

*Environmental Center for Our Schools (ECOS) Curriculum Guide* (a curriculum activities guide of nature and environmental studies for grades 4, 5, and 6).

Stepping Stone Environmental Education Center  
Route 2, Box 270  
Branchville, NJ 07836

*Teacher's Guide for Resident Outdoor Education Programs*, prepared by Joyce A. Gaus.

Tennessee Valley Authority  
Division of Power Production  
Chattanooga, TN 37401

*Nuclear Power, Introduction to*, 1970, text of background and basic material in the areas of nuclear reactor theory and operation.

Tennessee Valley Authority  
Information Office  
333 New Sprinkle Building  
Knoxville, TN 37902

*Use That Campus*, prepared by Division of Forestry, Fisheries, and Wildlife Development.

Topeka Public Schools  
Environmental Education Project  
1601 Van Buren  
Topeka, KS 66612

*Camping Skills*  
*Energy*  
*Energy and You*  
*Enjoying the Environment*  
*Environmental Fundamentals*  
*Forests and Man*  
*Insects and Spiders*  
*Nutrition and the Growing Population*  
*Tire Production and Pollution Control*  
*Water Pollution*  
*The Winter Environment*

(These curriculum guides cover grade levels ranging from elementary to secondary and a variety of curriculum areas.)

Union Township Public Schools  
Pollution Control Education Center  
2369 Morris Avenue  
Union, NJ 07083

*Priority One - Environment/A Pollution Program for Grades 1-9* (Describes the program and contains information on air pollution, solid waste management, marine and seashore pollution, water pollution, thermal water pollution, etc.)

U.S. Department of Agriculture  
Washington, DC 20250

*Environmental Thrust Handbook, 1971.*

U.S. Department of Agriculture  
Agricultural Marketing Service  
Washington, DC 20250

*How To Buy Food - Lesson Aids for Teachers, Handbook No. 443, 1973.*

Available from: Superintendent of Documents  
U.S. Government Printing Office  
Washington, DC 20402  
Stock No. 0-513-973(32)  
Price: \$0.80

U.S. Department of Agriculture  
Agricultural Research Service  
Information Division  
Washington, DC 20250

*Science Study Aids* (packet of educational materials involving nearly all scientific disciplines)

U.S. Department of Agriculture  
Forest Service  
Post Office Box 3623  
Portland, OR 97208

*Conservation Tools for Educators - Putting Conservation to Work, 1970.*  
*Investigating Your Environment*  
*Outdoor School Songs*  
*Preparing For Public Involvement*

U.S. Department of Agriculture  
Forest Service  
Washington, DC 20250

*Teaching Conservation through Outdoor Education Areas, July 1968 (PA-837)*  
*Teaching Materials for Environmental Education—Investigating Your Environment, July 1973.*

For sale by: Superintendent of Documents  
U.S. Government Printing Office  
Washington, DC 20402  
Stock No. 0101-0234  
Price: \$0.95

U.S. Department of Agriculture  
Soil Conservation Service  
2020 Milvia Street  
Berkeley, CA 94704

*The Community School Site: A Laboratory for Learning, March 1970.*

U.S. Department of Agriculture  
Soil Conservation Service  
Washington, DC 20250

*Outdoor Classrooms on School Sites (PA-975)*  
*An Outline for Teaching Conservation in Elementary Schools (PA-268)*  
*An Outline for Teaching Conservation in High Schools (PA-201)*  
*Soil and Water Conservation Activities - A Guide for Leaders of Girl Scouts (PA-664)*  
*Teaching Soil and Water Conservation - A Classroom and Field Guide (PA-341)*

U.S. Department of Health, Education, and Welfare  
Office of Education  
Division of Technology and Environmental Education  
400 Maryland Avenue, SW.  
Washington, DC 20262

*Aids to Environmental Education* (preschool-grade 3)  
*Aids to Environmental Education* (grades 4-6)  
*Aids to Environmental Education* (grades 7-9)  
*Aids to Environmental Education* (grades 10-14)

(Listings of environmental education materials compiled by Hatheway School of Conservation of the Massachusetts Audubon Society, Lincoln, MA 01773)  
*Understanding Environmental Education* (a collection of readings in environmental awareness)

U.S. Department of the Interior  
Washington, DC 20402

*Miniature Environments - An Environmental Education Guidebook*

U.S. Department of the Interior  
Bureau of Land Management  
Washington, DC 20240

*All Around You: An Environmental Study Guide* (Includes aids for the teacher and worksheets for the student.)

*Learning About the Environment*

U.S. Department of the Interior  
Bureau of Reclamation  
Washington, DC 20402

*Environmental Guidebook for Construction, 1974.*

Available from: Bureau of Reclamation  
Engineering and Research Center  
Attn: Code 922, Denver Federal Center  
Denver, CO 80225  
and  
Superintendent of Documents  
U.S. Government Printing Office  
Washington, DC 20402  
Stock No. 2403-00090  
Price: \$1.00

U.S. Department of the Interior  
National Park Service  
Stones River National Battlefield  
Murfreesboro, TN 37130

*Stones River National Battlefield—Artillery Monument Environmental Study Area—Teacher's Manual*

U.S. Department of the Interior  
National Park Service  
Washington, DC 20242

*Environmental Education on an Urban School Site. A Guide for Teachers*, compiled by Roy Graybill and Sandra Walter.

*The Green Scene: A Home Gardener's Handbook*, 1973.

*National Environmental Study Area: A Guide*

NEED materials include a teacher's guide, student classroom materials, and a student log book for environmental studies.

U.S. Environmental Protection Agency  
Office of Public Affairs  
Washington, DC 20460

*A Curriculum Activities Guide to Water Pollution and Environmental Studies*, Volumes I and II, 1972.

*Environmental Exchange: A Beginning* (President's Environmental Merit Awards Program)

*Fun With the Environment* (a fun-as-you-learn book for kids who care about the environment)

*The Processing and Recovery of Jon Thomas—Cool Cat!* (Solid Waste Management Series)

*Solid Waste Management - Recycling and the Consumer*

*There Lived a Wicked Dragon* (an environmental coloring book with solid waste management as the theme)

*Training, Upgrading, Reinforcing - Water Pollution Control Workers* (reprint from Department of Labor handbook)

*Your World, My World*

University of Minnesota  
Agricultural Extension Service  
St. Paul, MN 55101

*Wildlife Habitat Improvement Guide for Minnesota Youth*, 4-H Bulletin 4, 1973, and packet of environmental education guides.

University of Pittsburgh  
Department of Physics  
Pittsburgh, PA 15260

*Energy: A Technological, Economic, or Moral Crisis?* By John H. Anderson, 1974.

The University of Tennessee  
Environment Center  
346 South Stadium Hall  
Knoxville, TN 37916

*Environmental Problems - How Should They be Dealt With and By Whom?* (some thoughts which may be helpful for teaching in elementary schools) Also, a variety of other materials on a wide range of environmental concerns is available.

University of Wisconsin  
School of Natural Resources  
Center for Environmental Communications  
and Education Studies  
433 North Murray Street  
Madison, WI 53706

*A Bibliography of Key Environmental Resources  
Environmental Education - Related Research 1969-72 (an annotated bibliography)  
Teaching Materials and References in Environmental Education*

University of Wisconsin - Green Bay  
Environmental Studies Project  
Green Bay, WI 54302

*The Wisconsin Fox River Valley Watershed: Environmental Studies Project—  
Unit I, Watershed Overview  
Unit II, Maps, Regions, and Resources  
Unit III, Looking More Closely: Ecology and the Watershed  
Unit IV, The Watershed: A Time Perspective*

Upper Mississippi River Eco-Center  
Thomson, IL 61285

*Environmental Education Curriculum Guide for K-8  
Environmental Education: An Interdisciplinary Approach for the Intermediate Level—Fifth  
Grade*

Valley Center Union School District  
28751 Cole Grade Road  
Valley Center, CA 92082

*Valley Center Union School District's Nature Study Center, Teacher's Handbook and Field  
Guide, 1972. Prepared by: W. R. Reed, Project Coordinator*

Valley Center Union School District (continued)

Sponsored by: Department of Education (San Diego County)  
Center for Environmental Education  
6401 Linda Vista Road  
San Diego, CA 92111

Virginia State Department of Education  
Divisions of Elementary and Secondary Education  
Richmond, VA 23216

*An Activity Centered Program for Environmental Education (K-12), 1974.*

Warwick School Department  
1849 Warwick Avenue  
Warwick, RI 02889

*Marine and Environmental Studies Program (a guide containing objectives and activities for use in studying the marine environment), 1973.*

Washington Superintendent of Public Instruction  
Old Capitol Building  
Olympia, WA 98504

*Create Tomorrow... Today, March, 1974. Guidelines and instructional tools for use by teachers and administrators (elementary and secondary levels). This document was developed as part of the Energy Awareness Program, Washington State.*

Webster Groves School District  
Webster Groves, MO 63149

*Aids for Nature Interpretation (activities for a scheduled nature activity session), 1967.*

Yadkin Valley Economic Development District, Inc.  
Stokes County Community Action Program  
Post Office Box 417  
Walnut Cove, NC 27052

*Teacher's Guide--Ecology--Grade 4, 1972.*  
*Teacher's Guide--Ecology--Grade 7, 1972.*

### The Model Environmental Education Program

A model environmental education program is one which helps the individual become (1) aware of the environment and its associated problems; (2) concerned, knowledgeable, and accurately informed about the problems; (3) knowledgeable and informed about the possible future consequences of the problems; (4) engaged in clarifying values and making decisions based on attitudes and beliefs; (5) involved in finding the solutions to environmental problems—alternatives, tradeoffs, compromises, and costs; and (6) committed to and involved in some type of constructive action which enhances environmental quality.

—Jonathan M. Wert, Ph.D.