Places for Environmental Education

Educational Facilities Laboratories

Educational Facilities Laboratories, Inc. is a non-profit corporation established by the Ford Foundation to help schools and colleges with their physical problems by the encouragement of research and experimentation and the dissemination of knowledge regarding advanced facilities.

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Educational Facilities Laboratories

developed in cooperation with
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Foreword

Last summer, EFL cosponsored a conference to explore the implications of different types of facilities on environmental education programs. EFL's conference partner was Project Man's Environment, administered by the American Association for Health, Physical Education and Recreation which is an affiliate of the National Education Association. The conference, held at the Smithsonian Institution's Belmont Center, brought together 26 nationally recognized authorities in disciplines related to environmental education. The participants included architects, landscape architects, planners, government leaders and educators (see list of participants in appendix). The purpose of the meeting was to identify existing educational resources and strategies for making optimum use of natural, cultural, and physical resources for environmental study. It also sought to identify the kinds of educational facilities needed to harness these resources for improving environmental education programs.

This report has been distilled from the Belmont discussions. One further distillation enables us to summarize the report in four statements that represent the consensus of the 26 participants.

— Environmental education is not a passing fad. The world's environmental crises with their accompanying threats to human survival mandate that man begin to understand his role in the over-all scheme of existence. Establishing a harmonious balance between nature

and what man himself has created dictates the content of environmental education. Affecting change should be an end product of all education, and is an absolute essential of effective environmental education.

— Facilities facilitate learning. Educators must become familiar with facilities that can best contribute to effective environmental education. Usually a variety of facilities will be required.

— The methodology of instruction in environmental education is probably best centered around an interdisciplinary approach. One successful approach puts students through environmental encounters or experiences. A second approach interconnects a thematic strand through many aspects of a subject.

— Major capital expenditures are not necessary for schools to mount effective programs in environmental education. On the contrary, perhaps the most effective and successful programs use existing school plants and sites as the primary facilities for environmental studies. By expanding this concept for all existing community resources, and developing cooperative regional and district wide plans, every school in the country should be able to enter the environmental education arena.

Environmental Education

Not all educators and planners agree on a definition of environmental education, but they know what environmental education is and what it is not.

Environmental education is:

- a new approach to teaching about man's relationship to his environment—how he affects and is affected by the world around him
- an integrated process dealing with man's natural and man-made surroundings
- experience-based learning using the total human, natural, and physical resources of the school and surrounding community as an educational laboratory
- an interdisciplinary approach which relates all subject areas to a whole earth "oneness of purpose"
- oriented toward survival in an urban society
- life-centered and oriented toward community development
- an approach for developing self-reliance in responsible, motivated members of society
- a rational process to improve the quality of life
- geared toward developing behavior patterns that will endure throughout life

The consensus is that environmental education is not:

- conservation, outdoor resource management or nature study (although these areas may be included in an environmental education program)
- a cumbersome new program requiring vast outlays of capital and operating funds
- a self-contained course to be added to the already overcrowded curriculum
- merely getting out of the classroom

The Methodology of Environmental Education

Two of the commonly used techniques for instruction in environmental education are centered around "environmental encounters" developed by Dr. William Stapp of the School of Natural Resources at the University of Michigan, and the "strand" approach advocated by the National Park Service and detailed in the 1970 publication *Man*

*and His Environment: An Introduction to Using Environmental Study Areas.**

Environmental encounters are a series of experiences that focus the attention of elementary and secondary youths on the relationship of the economic, ecological, social, and political realities of living. These encounters are designed to provide environmental experiences at each grade level and are used to enhance and extend existing instructional programs. They are designed to be topical and relevant to the particular needs of individual schools, as well as to serve the environmental imperatives of the community. For example, the Morgan School in Utica, a suburban community near Detroit, developed a fifth-grade encounter on Investigating Septic Systems. It includes the study of disposal systems for human waste, a septic site installation visit, identifying community agencies charged with sewage disposal responsibility, and cost factors of different methods of disposal. A sixth-grade encounter in the same school investigates how the athletic field is watered, and the students study well drilling, water run-off, how water is transported, the costs of water, watershed problems, etc.

A major consideration of these encounters is that they fall into the normal range of challenge for children. They are neither too easy nor too hard, and involve the pupils in the selection and design of the encounter.

Encounters may focus upon basic resources such as land, air, and water, as well as upon community environmental problems such as waste disposal, housing, and recreation.

The strand approach interweaves taxonomical classification and open-ended research into all environmental learning so that students recognize that man and his environment are related to and dependent upon each other. It is a somewhat informal approach in which students limit their scientific vocabulary and teachers feel comfortable because they do not require any rigorous scientific education.

Whatever instructional approach is used, facilities for environmental education must be able to accommodate easily the instructional techniques inherent in the chosen philosophy.

Planning Environmental Education Facilities

Traditionally, the development of educational facilities has focused on problems of construction,

site layout, land acquisition, access, and related factors. This approach to facility planning, while expedient, has produced physical plants which do not necessarily create optimum learning environments.

So, in planning programs and facilities for environmental education, planners should:

- adapt the traditional school for use as a neighborhood environmental education facility, particularly in the limited space of urban areas
- strive for cooperation between educators and planners in developing a site as an environmental study area
- consider the following when developing any environmental facility:
  - ensure specific educational possibilities
  - include elements that illustrate the effects of human activity
  - choose an area that is consistent with sound environmental and ecological practices
  - select an area that is easily accessible to students
  - provide the essentials for servicing the facility
  - choose a site that will support repeated use by groups and students.
- institute a comprehensive program of teacher preparation, including knowledge of materials, concepts, and techniques of stimulating student learning and involvement
- develop a design concept, involving architects, landscape architects, builders, educators, and those who will use the facility
- develop a facility plan involving professionals, lay people, community organizations, and students in the process
- analyze program and personnel requirements
- make inventories of existing resources and incorporate them into the total design plan.

Effective Use of Existing School Facilities

The existing school facility is the most immediately available resource for implementing an environmental education program. School administrators and those who control the purse strings can no longer delay in initiating programs by hiding behind the convenient crises in educational financing. Effective programs can be mounted in existing school facilities. Adapting the immediate environ-

ment to create expanded learning opportunities is practical and economical. The school environment is easily accessible to the student; its quality familiar to him. Solving problems within this immediate environment provides him with a sense of serving his immediate community.

To realize the full potential of the school facility as a learning laboratory, certain preliminary steps should be taken:

- recognize that the school plant and environs can be used for environmental studies
- inventory the school site and plant to identify available resources and determine how they can be best used, e.g., geographical characteristics of the site, physical features of the building, environmental problems on the site
- identify good and bad characteristics of the site, programs needed, facilities necessary for a comprehensive program
- determine site areas and nearby areas that can be developed
- invite student, faculty, and community participation in the planning process, priority determination, and implementation
- open the school plant for extended programming
- establish an environmental studies laboratory within the plant
- reveal the school building's structure and mechanical services so students can see how the building works.

William Stapp said, "the potential for developing environmental education facilities within an urban school is limited only by the boundaries of one's imagination, resourcefulness, and enthusiasm."

Some possibilities, particularly in urban schools, are: a) a rooftop development for gardens, weather equipment, air pollution detection equipment, and sound pollution devices, b) courtyard development using partial enclosure, c) development of surrounding streets, d) using basement and service areas of the school to study heating, power sources, waste disposal, water circulation, etc. The custodial staff becomes an important part of the pedagogical staff in this area. e) studying traffic patterns in and around the school. Tree planting, shrubbery, student sculpture, glacial boulders, and changes in textures and colors of surfacing material can contribute to the aesthetics of the site and at the same time provide sources for environmental study.

The Morgan Elementary School developed an outstanding environmental education curriculum

based upon full use of the total school site as a facility. The acreage around the school was left in its natural state so that trees, shrubs, wildlife, and other ecological realities could be studied at first hand. The children have done most of the planting in and around the school. Open classrooms abound with environmentally oriented programs at every subject level. The walls are covered with student work on subjects of ecology and environmental concern. Geography and social studies are studied in the surrounding woods and in homes. Neighborhood institutions and the mechanical equipment rooms of the schools swarm with students learning at first hand how their lives are affected by the environment in which they study.

Science teachers and students test water and air content, collect soils, and together investigate the possibilities of a new school policy to eliminate incineration. The art that decorates the halls centers on environmental themes, as do the collages and scrapbooks which the youngest children assemble. Under the direction of JoAnne Burgess, who is coordinator of Environmental Education, a series of grade level environmental encounters has been developed by the faculty, which seems to be committed to the philosophy of running an environmental strand through all curriculum matters. The school's principal, Richard Gwinn, meets regularly with student, parent, and community groups to keep the school in the focus of community environmental affairs.

At the Madison Elementary School, situated in a depressed section of Washington, D.C., an adjacent abandoned lot has been developed into an outdoor environmental laboratory that is tenderly cared for by the students and the inhabitants of the community. Here one finds a tiny desert, some grassland, a forest area, and a farmland which stand as symbols of pride and accomplishment in an otherwise degraded area. The project required the cooperation of the educational community and government agencies and has triggered a community-based beautification program for the neighborhood.

In New York City, piers, islands, waterfront, and streets serve as classrooms for an environmental education program that has succeeded for several years under the guidance of Mrs. Rose Blaustein, science coordinator for District 2. Children use Governor's Island, a military enclave in the harbor, to study water ecology, conduct gull censuses for the Audubon Society, and observe the life style of military families. Students have adopted trees on city sidewalks, led community im-

provement programs, and encouraged parents and teachers to participate in environmental affairs of the community. Mrs. Blaustein now uses her experiences to conduct in-service training programs for teachers throughout the city school system.

Using Total Community Resources

After exploring the potential of the immediate school facility, the next step is to look beyond the school environment and tap the learning resources of the community. Environmental education is an open process which knows no political, social, or geographic boundaries. By expanding the learning environment to include the community, it is possible to establish a system of environmental study areas and facilities that provide an overall view of where man lives and how he lives.

An environmental study area may be any site or facility—natural or man-made, park or urban setting, historical landmark or scenic site—used by a teacher to help students understand the relationships among the subject or concept being taught, the environment, and man. Resources that might be used for such purposes include libraries, shopping centers, courthouses, police and fire stations, sanitation and treatment plants, foundries, industrial parks, streams, nature centers, camps, museums, wildlife preserves—the list is practically endless.

The Milwaukee Public Schools, for example, use several community resources and facilities in the Greater Milwaukee area as sites for their program in environmental education. They use a mobile environmental laboratory to travel to schools, the local zoo, the three rivers in the center of Milwaukee (to study pollution and water problems), the Museum of Natural History, the planetarium, the Mitchell Conservatory (three huge glass domes each containing a different climatic environment), an outdoor study center, a resident camp facility, and a public forest, as well as the classrooms and science laboratories in every school. The school district is in the process of developing a master plan for environmental education. The significant aspect of this program is that the Board of Education coordinates the entire school district and makes available manuals, guides, workbooks, and other materials for teachers and pupils at each of the facilities. This kind of community cooperation provides the exposure necessary to generate interest among other

institutions in the city. For example, the Schlitz Foundation of Milwaukee recently offered the National Audubon Society a 185-acre tract of land on the shores of Lake Michigan for an environmental education site.

The well-publicized Parkway School in Philadelphia also makes total use of community resources for school purposes. Although the cooperating institutions are not used specifically for environmental education, the concept is applicable, and certainly the community environment and its institutions become part of the total educational facility. Parkway uses over 70 Philadelphia facilities, including the Philadelphia Museum of Art, The Franklin Institute of Science and Technology, and the Philadelphia Public Library.

The Regional Center

Since the environment knows no boundaries, it is as important for a farm boy in Nebraska to be aware of environmental principles as it is for his counterpart growing up in an East Coast ghetto. Due to the increasing mobility of society, both boys will probably be exposed to a variety of environments during their lifetimes. While each must be primarily concerned with coping with his immediate environment, it is equally important that he gain a basic understanding of other environments which he someday will almost certainly encounter.

Taken in this context, environmental education is cross-cultural. This universal characteristic has prompted many authorities to recommend a regional approach to comprehensive environmental education planning. Since the regional approach would serve a wide geographic area, it would result in large, sophisticated facilities. The regional approach should:

- identify the abundance of resources in the surrounding community (human, physical, natural) and explore the opportunities of using them for learning experiences
- explore sources of municipal, state, and federal support and assistance, i.e., state department of education, regional office of education, National Park Service, U.S. Forest Service, etc.
- provide logistical support, particularly by *providing transportation*
- look beyond the immediate

regional area for resources such as parks, corporations and museums

- use comprehensive planning procedures to optimize existing facilities, to avoid duplication and wastefulness, to make multiple use of resources, and to plan educational programs that recognize the differences in urban, suburban, and rural environments.

The Land Between the Lakes area of the TVA provides a wide-ranging program for a large area. School districts from many cities and towns use the headquarters at Golden Pond, Kentucky, as an environmental education center, for conservation studies and outdoor experiences.

The Nolde Forest State Park Environmental Education Center near Lancaster, Pennsylvania, is being designed to serve 17 Pennsylvania counties. It will run programs for resident groups, day trip students, and in-service training for educators. Its many natural features will attract thousands of students and outdoor recreation enthusiasts for programs dealing with conservation and environmental studies.

The Resident Environmental Education Center

A resident environmental education center can provide a variety of services designed to meet the particular needs and resources of the area. One objective is to put students in a new environment with people their own ages from very different home environments. They all live together for an extended period. The resident center also promotes closer interaction between teacher or leader and child or between parent and child. The resident experience provides sociological and aspirational experiences for inner-city children which are hard to come by in the traditional school setting. Customarily, the resident experience lasts for a week.

When developing a resident environmental education center, the following should be considered:

- a facility can become a self-contained society for the residency period, permitting the students a major role in environmental decision-making. The facility can then evolve into the focal point for all environmental management efforts in its area; such as planning, financing, and designing.
- the center's service should be oriented to directing, coordinating, and interrelating a

multitude of study opportunities available throughout its environs.

- it should serve citizens, teachers, leaders, and students as a training center where they can become involved in the problem-solving process as it relates to environmental education concerns. Such training would stress the actions and interactions that should take place at the community level, but it would include relationships to other levels of government.
- the facility should have devices for monitoring the conditions of the immediate environment, and provide students with current information on the quality of this environment, and, over a period of time, on its improvement or degradation.
- the center should serve as an information bank, allowing data collected by groups in various areas of the regional service area to be analyzed within the region and stored and shared with each other and with other groups and other regional centers for comparative study purposes.

The Lorado Taft Field Campus of Northern Illinois University, in Oregon, Ill., serves as an environmental education resident center for a large part of northern Illinois. School groups, college groups, community organizations, and other interested groups use the facility, which is staffed and directed by professionals from the university. Similarly, about one hundred miles from New York City, the Ashokan Field Campus of New York State's College at New Paltz provides resident facilities for about 150 students taking one-week courses in environmental education. The facility is very much in demand and is used throughout the entire school year by classes from New York City and the metropolitan area. Dr. Kent Reeves, the director, is a full-time staff member on the college's faculty who is assigned primarily to the development of the program and facilities at the Field campus.

The Hidden Valley Camp near Fishkill, New York, illustrates how a social agency's facility can be put to use by public schools during the school year. During the summer the camp is used by the Fresh Air Fund, but at other times schools from New York City use it for camping and environmental education. The staff is supplied by the Fund and the schools. Hidden Valley is a completely winterized residence accommodating 250 and is also designed for comfortable use by the physically handicapped.

The significance of this type of [illegible]

ment is that often there is no need for school districts to build or purchase expensive resident facilities. Most urban centers are ringed by camps belonging to social agencies, institutions serving youth, and suitable privately owned facilities. Most of these are available for rental or sublease during the school year.

Joint Use of Facilities

The ultimate solution for environmental education facilities would be to combine elements of regionalism and resident sites with practical financial arrangements. With the public keenly aware of the need to enter into cooperative educational ventures in order to stretch the education budget, joint ventures between school districts or with other agencies becomes a reality. In environmental education, cooperative programs would allow districts to share resources, personnel, facilities, and expertise at the same time as sharing costs.

New York State set a precedent several years ago with the Boards of Cooperative Educational Services (BOCES) that enabled small school districts to combine their funds and resources in developing educational programs which would otherwise be unavailable to them. In considering joint ventures, planners should not overlook the possibility of cooperating with community educational agencies other than formal educational institutions. These could include recreation groups, conservation societies, youth agencies, national service organizations and quasi-public institutions. In many cases, these agencies seek the cooperation of the local schools.

These joint efforts can result in substantial programs and facilities, such as district-wide resident centers or even regional centers serving a larger area. They also can result in wider and more efficient use of the existing facilities of the cooperating agencies or schools.

*Available from the American Association of Health, Physical Education and Recreation, 1201 - 16th Street, N.W., Washington, D.C. 20036.

Appendix

Participants in national conference on places for environmental education. Smithsonian Institution, June, 1970

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