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ABSTRACT

Presented are proceedings from a 3 day conference at which physical education and recreation personnel and teachers of emotionally disturbed children considered the educational and therapeutic possibilities of outdoor education for emotionally disturbed children. The introductory address explains that the outdoor educational process is especially suited to needs of the emotionally disturbed because a residential outdoor educational experience can minimize feelings of institutionalization which may threaten the emotionally handicapped child, and because outdoor experiences offer the added dimension of adventure to learning. Described is a summer program which accepts emotionally disturbed boys and girls in 2 week sessions and attempts to enhance self concepts and change attitudes toward school and the learning process. Noted are resources available for outdoor education programs as well as administrative concerns related to financing such programs. Four speakers provide practical guidelines (which comprise the major part of the proceedings) showing how science, mathematics, social studies, and art curricula could be enriched by using outdoor education techniques. Final sections deal with evaluations of proposed outdoor education programs as well as evaluations of the institute. (GW)

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Outdoor Education Experiences for Emotionally Handicapped Children and Youth



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The University of the State of New York
THE STATE EDUCATION DEPARTMENT
DIVISION FOR HANDICAPPED CHILDREN
Section for Emotionally Handicapped Children
and the
DIVISION OF HEALTH, PHYSICAL EDUCATION
AND RECREATION
Bureau of Physical Education and Recreation
in co-sponsorship with
STATE UNIVERSITY COLLEGE OF ARTS AND
SCIENCE, PLATTSBURGH
Faculty of Professional Studies

June 7, 8 and 9, 1972
Valcour Conference Center
Plattsburgh, New York

Special Studies Institute
Funded through
PI 91-230

● PROCEEDINGS ●

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p r e s e n t s

"OUTDOOR EDUCATION EXPERIENCES FOR EMOTIONALLY
HANDICAPPED CHILDREN AND YOUTH"

June 7, 8 and 9, 1972
Valcour Conference Center
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PREFACE

The following proceedings represent a first attempt in the state of New York to meet the specific needs of the emotionally handicapped, through the outdoor education approach. This institute was conducted with the major format of combining the creative talents of many selected people familiar with the needs of the emotionally handicapped, and selected specialists in the area of outdoor education.

This institute represents a tri-sponsorship of the Division for Handicapped Children and the Division of Health, Physical Education and Recreation, both within the New York State Education Department, and the State University College of Arts and Sciences at Plattsburgh. This combined effort resulted in an exciting institute, the proceedings of which follows.

These proceedings represent the many presentations offered and supplementary materials provided for the participants, and a copy of these proceedings was distributed immediately after the formal closing of the institute.

It is hoped that the reader of these proceedings will vicariously share the excitement generated by this institute and will realize that this first attempt a working document which, through future efforts, will result in a refinement which may be a guide to aid our state's emotionally handicapped children through the primary resource of the outdoor education method.



Ernest Coons, Institute Director
State University College at Plattsburgh

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PURPOSE

Outdoor education is the use of the outdoors creating unique learning situations to enrich the curriculum on all levels for all subjects. This method of curriculum enrichment has been used successfully in the past and is gaining new and added appreciations as a viable means to create first-hand, meaningful learning situations.

This institute is offered in an informal, naturally beautiful setting, is designed to provide some of the possible approaches in planning and conducting outdoor learning experiences for emotionally handicapped children. The primary resource will be the institute participants who know the real needs of emotionally handicapped and selected professionals in the outdoor education area working together to develop some means and approaches to programming for these special children through the outdoors. This creative effort will be documented through the institute proceedings and it is hope that these proceedings will form the basis for further study and program development for the emotionally handicapped through the primary means of curriculum enrichment using outdoor education methods and techniques.

PLANNING COMMITTEE

NEW YORK STATE EDUCATION DEPARTMENT

Division for Handicapped Children

Raphael F. Simches, Assistant Director

Section for Emotionally Handicapped Children

Charles Matkowski, Supervisor
Theodore Kurtz, Associate

Division of Health, Physical Education and Recreation

George Grover, Director

Bureau of Physical Education and Recreation

Irwin Rosenstein, Associate

STATE UNIVERSITY COLLEGE OF ARTS AND SCIENCE
AT PLATTSBURGH

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Physical Education and Recreation

Nicholas Troisi, Director
Office of Continuing Education

Donald McIntyre, Conference Coordinator
Office of Continuing Education

Ernest Coons, Coordinator of Outdoor Education

INSTITUTE STAFF

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Coordinator: Donald McIntyre

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Albany, New York

Robert Miller
Bureau of Urban and Community Programs
New York State Education Department
Albany, New York

PROGRAM SCHEDULE

Wednesday - June 7, 1972

Afternoon

Arrive at Plattsburgh. Move into assigned housing either at Valcour Conference Center or at PSUC Campus

4:00 - 5:30

Registration, Valcour Conference Center

5:30 - 6:00

Informal Introduction of Participants

6:00 - 7:30

Dinner

7:30

General Meeting

Greetings

Dr. William F. Lawrence
Vice President, Plattsburgh
State University College

Dr. George Grover, Director
Division of Health, Physical Education
and Recreation

Charles Matkowski
Section for Emotionally Handicapped Children

Overview of Institute

Ernest Coons, Institute Director

Introduction of Keynote Speaker

Dr. Irwin Rosenstein
Coordinator of Outdoor Education
Division of Health, Physical Education
and Recreation

Keynote: "The Unique Dimension of
of Outdoor Education"

Dr. Thomas Rillo
Professor of Environmental Education
Glasboro State College
Glasboro, New Jersey

PROGRAM SCHEDULE

Thursday - June 8, 1972

8:00 - 9:15	Breakfast at Valcour Conference Center for all participants
9:15 - 9:30	Announcements
9:30 - 10:00	"What Really is Outdoor Education?" ...Thomas Rillo and John Weeks
	Analysis of conference center site to consider sensory awareness technique and review the many means of enrichment of the curriculum using the outdoors as a primary resource
10:00 - 10:45	"Twin Valleys Summer Project"
	Presentation of an outdoor education program specifically designed and tested which offers predetermined attitudinal changes for disadvantaged children...Ernest Coons
10:45 - 11:00	Coffee
11:00 - 11:45	"Administrative Overview of the Outdoor Education Method with Emotionally Handicapped Children"
	Planning the Program (Group A)...Ernest Coons
	Financing the Program (Group B)...Charles Matkowski
	Resources Available (Group C)...Irwin Rosenstein
11:45 - 12:30	Rotation of Groups A, B, C
12:30 - 1:00	Break
1:00 - 2:00	Lunch at Valcour
2:00 - 2:45	Rotation of Groups A, B, C
2:45 - 3:30	Travel to Twin Valleys Outdoor Education Center
3:30 - 4:30	"Subject Enrichment For Emotionally Handicapped Using Outdoor Education Techniques"
	Participants select one
	Science...John Weeks Mathematics...Thomas Rillo Social Studies...Ernest Coons Art... "Bud" Haskell
4:30 - 5:30	Participants select second choice from above

PROGRAM SCHEDULE

Thursday - June 8, 1972 (continued)

- 5:30 - 5:45 General Meeting, Topic: "Limitations and Strengths of Resident Outdoor Education for the Emotionally Handicapped."...Ernest Coons
- 5:45 - 8:00 Cook out supper
- 8:00 "Feed Back" and recording from participants on resident site survey
- Return to Conference Center and Campus

Friday - June 9, 1972

- 9:00 - 10:00 Breakfast at Valcour Conference Center for all institute participants
- 10:00 - 11:00 "Planning an Outdoor Education Program for Emotionally Handicapped" ... all consultants
- 11:00 - 11:30 "Evaluation - A Necessary Process"
... Robert Miller
- 11:30 - 12:30 "Evaluating the Necessary Requirement for Reinforcement of Outdoor Education Program"
... Ernest Coons
- Group Evaluation of Institute and Open Discussion with Consultants
- 12:30 Buffet Lunch, Final Remarks
Distribution of Proceedings

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GREETING

BY Dr. William F. Lawrence

As you probably know I have resigned from the college and I wondered today as I was preparing what I would say, how I would function as a "lame duck." As I was putting my thoughts together as to what I would say, I reflected over the 36 years in administration in the 39 years I have worked in public education. I questioned what effect I had had on people and what effect I had had in education.

I recall an incident when I was superintendent of schools in Wantagh and was trying to sell the community on a budget of which a large portion was for emotionally disturbed youngsters. Because of high taxes in this area, the meeting drew a large crowd. During the meeting much discussion occurred on whether the money should be included for emotionally handicapped or money in the budget for bussing these children who lived within walking area. Bussing was necessary as highways intersected their paths. I was really, in my judgment, fighting a losing battle. But, way in the back of the auditorium which held 1500 people, a woman stood up and said, "if you had a youngster like this you wouldn't be talking like this." Everything she said in a very few sentences did more than I could do if I was standing up there trying to talk to these people about the budget and what effect it would have on the total community. As I thought of this program and talking with you people I was thinking about this particular incident because it did something to me as an individual and a person who had the responsibility of leading the community in education and they were really up to here with taxes and were being asked to support programs for young people who were different from other young people in the community and other young people who we are trying to reach.

This evening, I had the opportunity to chat with Dr. Rillo. Twenty years ago when I met Dr. Rillo we talked about the handicapped and disadvantaged children, but what we didn't know about was the emotionally disturbed children.

At that time we really didn't know the effect open air education and its facilities might allow for young people who are emotionally disturbed . At that time we really didn't know what emotionally disturbed children were, we had some idea that they were different and they needed help.

So if you pardon me while I think of myself as a person who is moving away after 36 years in administration and 39 years in public education which include elementary, secondary education and college level. I consider one of my small achievements the fact that I awakened the community to the fact that there are other young people that I had responsibility to and that they need help. And, it took one woman who sat in the back and made her comment over 15 years ago that still stays with me.

That is the reason I appreciate the opportunity to participate and welcome you and say that Plattsburgh is pleased to act as your host. I don't have to tell you how important this job is, because that is what this whole project is about. What I am concerned about and disturbed about is that maybe we aren't really sure of how terrific this job is, how important it is, and how much these young people need us. The important thing is that we recognize and know hopefully what we can do for them through outdoor education.

So, I hope you will find your experience here in the next couple of days fortifying you in what you are doing because even in the short span of time I didn't get the job done, but I had the satisfaction of planting a few seeds and I hope that this is part of it.

So in behalf of the college, I welcome you and I hope this will give you and extra drive that you need for the young people who need so much.

Thank you for coming.

Greeting

BY Dr. George Grover

It's a real pleasure to bring you greetings from the State Education Department. We in the Division of Health, Physical Education and Recreation have long had a strong and sincere interest in outdoor education as a part of the curriculum of schools in the State. Some of you, undoubtedly, knew Cas Miles, formerly of our staff, and the efforts he made over many years in the pioneer promotion of outdoor education programs. Since his retirement a few years ago, Irwin Rosenstein has taken up where Cas left off. And, I am pleased to add, Irwin's doing an outstanding job in this program.

Since coming to the Department some 19 years ago, I have been asked many times why we in physical education and recreation are so involved with outdoor education, why we provide leadership for this program. There are many reasons for this but among the more basic are two: (1) activities such as camping, living and surviving in the out-of-doors, fishing, boating, and other outdoor sports are integral parts of our programs, and (2) leaders in physical education and recreation saw many years ago the growing need for education in and about the out-of-doors as our culture became increasingly urbanized. Early leaders in our field realized the great potentials for education that could accrue in an outdoor setting. Thus, it was only natural that physical educators and recreators would be in the vanguard of the movement to promote outdoor education programs. Having said this, let me now hasten to add that we do not consider outdoor education as an exclusive franchise -- as a one-discipline area of the curriculum. On the contrary, we strongly support the contention that outdoor education is a multi-faceted approach to education, that any and every area of the curriculum that can benefit from these experiences must become involved, and that the requisite leadership can come from any of the disciplines.

We in the Division of Health, Physical Education and Recreation are, therefore, particularly pleased to be co-sponsors of this Institute with the Division for Handicapped Children and the State University College of Arts and Science at Plattsburgh. This Institute is an example of the multi-discipline approach. It is also, to the best of our knowledge, the first special studies institute concerned with outdoor education and its contributions to emotionally disturbed children and youth. We have a strong conviction that outdoor education provides many opportunities to enrich the curriculum for all children and that such enrichment is especially important for the emotionally disturbed child. In those school districts where outdoor education programs exist, they are generally very successful. Teachers and pupils have found them to be an enjoyable approach to learning. Teachers and pupils develop a rapport that is seldom achieved in other areas of the curriculum. The environment is less formal and more relaxed, particularly in residential camping. Living and working together in the out-of-doors develops cooperation and a spirit of fellowship. Experiences become more meaningful. Developing an awareness of nature and man's relationship to it -- communing with nature, as it were, are good for the soul and piece of mind. I could go on but I'm sure you know and appreciate that the potentials are inherent in outdoor education programs for significant contributions to the education of emotionally handicapped children and youth.

Much of what can be done for such individuals through this program has yet to be blue-printed. This is one of the prime reasons for this institute and others which may follow--bringing people with expertise in various areas together to work collectively in producing creative and effective program guidelines so that all concerned may profit. It is a most worthwhile undertaking and we in the Division of Health, Physical Education and Recreation are proud to be a part of it.

All good wishes for a most productive and enjoyable institute. I shall look forward to reading the proceedings in the near future.

Greeting

BY Charles Matkowski

On behalf of the Section for Emotionally Handicapped Children, Ted Kurtz and I welcome you. I believe this is the first special study institute in the world solely devoted to the topic of outdoor education experiences for the emotionally handicapped. This FIRST would not have been possible without the insights of Irv Rosenstein and Ernie Coons both of whom saw and acted upon new Outdoor Education program possibilities.

Providing "outdoor" experiences for emotionally handicapped children is not a new happening. In New York State and throughout the United States, institutional school districts, residential treatment centers, mental hospitals, private and public schools, "dabble" in outdoor activities that center around summer camping, nature study, scouting, etc.

This special study institute will relegate "camping" and such etceteras to subsidiary roles and will emphasize academics. We will explore the use of outdoor educational concepts to enhance basic skill acquisitions and other instructional endeavors such as Art experiences. It is not expected that a mad rush will occur at the conclusion of this institute to implement drastic curriculum revisions in your respective 1972-73 programs. However, we do expect that some of the concepts you will be gripping and groping with during these next three days can be sensibly incorporated into the curriculum offerings of your districts.

Next month, the same co-sponsoring agencies will hold a special study institute for thirty-five teachers of emotionally handicapped children and youth. The institute will be geared to train teachers to demonstrate outdoor

education concepts. Throughout the 1972-73 school year, Saturday workshops will be held in the following regions: Long Island, New York City, Lower Hudson, Western New York, Central New York, Middle Hudson. The teachers from July Institute will lead these workshops.

At the present time, this institute's sponsoring agencies and two city school districts are exploring the initiation of a cooperative outdoor education venture during the 1972-73 school year. It is anticipated that two demonstration projects involving emotionally handicapped children will emerge. An evaluation design will ascertain at year-end whether or not the participating pupils have made significant attitudinal and academic gains.

We think outdoor education as constituted in urban special education programs for emotionally handicapped children is a viable change agent. A year from now, at the conclusion of the 1972-73 school year, we will know whether or not the ideas we will be espousing during the next three-days have merit beyond that of conventional wisdom.

I am looking forward to spending the next three-days meeting new as well as greeting old friends.

OVERVIEW

BY Ernest Coons

I would like to discuss with you an overview of the institute and although it has been expressed to you by the tri-sponsorship, I sincerely welcome you here. I have spoken to many people who were sure what this was all about and I'm glad you had the courage to come and find out.

The format, as you will see from the material we have released, is truly very different. Through our approach we will truly learn together.

Before you leave on Friday you will have a copy of the proceedings of this institute.

You will note from the cover of our proceedings a couple of kids in a tree, it is a coincidence and although it is not written that was, the theme is specifically, that we are up a tree on what we should do with the emotionally handicapped kids in the out of doors. Charlie indicated to you that there isn't any easy answer on this and we don't pretend that there is one. We think that, at least the basic format is based on, unadulterated honesty. You probably know your kids better than anyone else. You certainly should be this time. You see them administratively, many of you have seen them as teachers in the school, many have seen them through the eyes of another teacher. We will combine this kind of creative talent with people who will use the out of doors for curriculum enrichment. I suspect by the end of this conference the cover should have been the kids out of the tree -- maybe we will get out of the woods through the various avenues we will explore to help the emotionally handicapped.

I would like to digress for a few minutes and tell you about John Wanamaker who founded that store in Philadelphia. John was a very devote and religious man. So much so, that whenever there were a number of people around he would take out his bible and preach. He felt if his sales staff faced a crisis they would immediately recall the past scriptures read and do the right thing. One day while

walking around the balcony that encircled his store, he noticed a young man at the shirt counter and heard him ask, "I would like to buy this shirt." The man felt of the material of the shirt the clerk handed him and asked the price. The clerk replied that the price was \$5. The customer asked if there was something better. The clerk rummaged around a bit and came up with the same identical shirt and asked how the customer liked it. The customer asked the cost and when he was told \$8, he was delighted. He purchased the shirt and left the store. Wanamaker immediately rushed down, put his hand on the young clerk and said, "listen, I read to you from the bible and I watched that last sale transaction. Tell me what scripture did you use for that." The clerk flushed and stammered and finally said, "Sir, he was a stranger, and I took him in."

Well, we don't intend to do that with you. The purpose of our institute is simple, but yet it isn't really at all. The purpose of our institute, I assure you, is getting together with people who know children and the needs of children and people who know the excitement of using the out of doors. I've noticed a few different kinds of reactions. Your immediate question is what is so exciting about the out of doors as compared to the normal kind of learning. My first and immediate response would be that you take kids to the library because there are books there. You take kids to the out of doors simply because there is a learning experience that is very unique. The first one is first-hand learning experience from what is real. Secondly, practical intelligence has its respectful place in the out of doors in the natural learning situation. That may not be necessarily true inside. There are greater opportunities for individual recognition leading to self respect. The chance for the teacher to know the kids. The out door learning experience many times serves as a direct reinforcement to learning because it give the immediate success in positive interaction pattern following that experience. There's an opportunity for greater, more positive teacher-pupil and

pupil-pupil respect. All which leads toward a mutual esteem. There's a great opportunity for each student to work within his own ability and serve his needs and duties as he perceives them. There's fulfillment in need for adventure, discovering and learning can be fun. You'll do this and you'll find the children will actually say how can I be learning I'm having too much fun and it will really come about.

There is a natural situation, with a constant test, retest situation -- there is an opportunity to perceive that the teacher or other students do not know all the answers and it is an opportunity to seek resources for added information.

Just a few minutes before supper we were talking how difficult it was to get teachers to do this and someone who has great experience in this audience said one of the greatest problems is to find teachers willing to say, "I don't know, lets find out."

The outdoors provides a constant, exciting, featurable moment. There is an opportunity to expand and redefine observations and sensory ability. There is a natural means to guide and use the proper means in problem solving in the method of approach, the discover approach. There is maximum opportunity for the student to directly control the learning situation and keep it in his own conceptual framework in his growing abilities.

Our format was set up tonight very informally. We are our own best resource and our approach is to effectively use the out of doors for the children we are serving. Also we are to gain added insights of out door education as the method of enriching the curriculum at all levels. We have offered a program at Twin Valleys, the State University College's Outdoor Education Center, using the above concepts and the primary objective has been pre-determined attitudinal change. This has been very successful.

Tomorrow we will go to Twin Valleys and study math, art and science through the out of doors. Before that we will study the planning, financing and

and the resources available to you if you want to embark in this direction.

We will study the limitations of Twin Valleys for our program and try to find modifications in order use a facility of this type for the emotionally handicapped.

Friday, a program will be planned by all to bring about a program which you can use in your particular realm.

Feel free to contact me if you have any questions.

Introduction of Dr. Thomas J. Rillo

by Irwin Rosenstein

I have been given the pleasure this evening of introducing to you our keynote speaker.

As you will notice from the program, the topic of his presentation is "The Unique Dimension of Outdoor Education." I think it is only appropriate, knowing the background and professional involvement of this gentlemen, that my introduction be titled "The Unique Dimension of Dr. Thomas J. Rillo."

Tom, whom I have had the pleasure of knowing both personally and professionally the past few years, was born and raised in Summit, New Jersey. His education include graduation, magna cum laude, from Panzer College in East Orange, New Jersey; a master of arts degree in Outdoor Education from New York University; a master of arts degree in Personnel and Guidance from Seton Hall University and a Doctor of Philosophy degree in Administration and Supervision from Southern Illinois University.

His teaching and administrative experience includes teaching in the public schools of New Jersey, as well as being a member of the teaching faculty and coordinator of outdoor education at Montclair State College. He has served as Director of the New Jersey State School of Conservation in Branchville, New Jersey; Coordinator of the Outdoor Education Center and Chairman of the Outdoor Education Division at Southern Illinois University and Professor of Outdoor Education at Glassboro State College, Glassboro, New Jersey. This fall he will become a professor at Indiana University in the School of Parks and Recreation.

Tim literally grew up in the outdoor education movement due to his long study with the late Dr. Lloyd B. Sharp, a noted authority on outdoor education and often referred to as one of the founding fathers of the outdoor education concept.

He has assisted numerous public schools in the planning and implementation of

outdoor education programs and has conducted a great many outdoor education in-service education workshops for teachers.

He is a prolific writer and has authored numerous articles concerning outdoor education.

Tom is married and is the father of three children.

We are pleased that he was able to find the time in his busy schedule to be with us at this Special Studies Institute and the technical knowledge and experience in outdoor education that he will be sharing with us will contribute to the success of the Institute.

It is indeed a pleasure to present to you our keynote speaker of the evening, Dr. Thomas J. Rillo.

OUTDOOR EDUCATION AS A UNIQUE DIMENSION FOR EMOTIONALLY HANDICAPPED CHILDREN AND YOUTH
by Dr. Thomas J. Rillo

It is a sincere pleasure to have the opportunity to address this group and to present some of my views on the subject of outdoor education in general and more specifically its implications for the emotionally disturbed child or youth. This is a very significant opportunity in that you all are educators who represent either administration or the teaching ranks. It is a real challenge, and I hope that I am capable of meeting it.

Historical Roots of Outdoor Education

Outdoor education is not a new innovative concept to this region of upstate New York. There has been a great deal of activity, and the historical roots run deep. The New York State teachers colleges, in 1942, started an outdoor education movement by sending groups of students and college faculty to National Camp, a training center for outdoor education, located in New Jersey, and directed by Dr. Lloyd Burgess Sharp. New York State Colleges were among the first to begin experimentation with leaders in outdoor education. Today many of these colleges have their own programs in operation in one form or another. Many of these colleges purchased land and established resident facilities for outdoor experiences for both pre-service and in-service teachers. Students were able to learn firsthand how science, geography, history, music, art, literature, and other areas of the curriculum can be interwoven and interrelated before they become sorted, cataloged and divided into separate departments. Plattsburgh State, New Paltz State, Cortland State, Fredonia State, Geneseo State, Oneonta State, are among the schools which developed outdoor centers in a faculty-student cooperative venture.

So, you see, the legacy is there, and over the years other institutions and agencies have responded to this legacy and have developed many different approaches to outdoor education. If one really looked at the depth of the historical roots of outdoor

education, one would find significant activity and contributions emanating from Cornell University in the 1890's through the early 1900's. The nature study movement perpetuated by Liberty Hyde Bailey and Anna Botsfor Comstock was the outgrowth of an effort to put the student into contact and sympathy with his own life. Bailey, in a paper read in general session at the National Education Association Annual Meeting held in Boston, July, 1903, stated that "it was strange that such a movement would be necessary. It would seem that the education of the child should place it in intimate relation with the objects and events with which it lives. It is a fact, however, that our teaching has been largely exotic to the child; that it has begun by taking the child away from its natural environment; that it has concerned itself with the subject-matter rather than with the child. This is the marvel of marvels in education." How little we have learned and how short a distance we have traveled during these past sixty-nine years.

The Cornell Rural School Leaflets were prepared by Cornell personnel and disseminated throughout the State of New York. They were written as teaching-learning guides for both students and teachers. They covered a wide variety of nature-oriented subjects, and their usage necessitated the conveyance of students to the outdoor laboratory. The nature study movement was a revolt from the too exclusive science-teaching and book-teaching point of view, a protest against taking the child, first of all, out of its own environment. The Cornell nature-study movement was a catalyst for outdoor education and emphasized the fact that it is not the semantics involved that count, but what is done with programs designed to convey to students basic understandings and concepts about the world in which they live.

Looking still deeper into New York State's historical involvement with outdoor education, one would discover the contributions of the organized camping movement. This movement began largely in New York State. The Adirondacks were the scenes of many early camping ventures. New York City was attracting thousands of farm people

to its industrial and technological opportunities. The Industrial Revolution was underway, and during the mid-1800's the country was moving from a largely rural population to a more urbanized one. After the Civil War, a comparatively rapid change took place--cities grew, the country turned more and more from an agricultural to an industrial and commercial nation. By 1880, a quarter of the population was living in cities.

Former rural people living in New York City and its adjacent suburbs were concerned that an urban life was depriving their children of the basic and direct experiences with nature that they once had as a part of their everyday living on the farm. Many of the more affluent parents solicited expert woodsmen and guides to take small groups of young boys on camping excursions for varied periods of time. As the years passed, more organized attempts were made with camping experiences for youth and ultimately included girls. Out of these early attempts many fine camps and programs emerged. Although the camps were located throughout the New England States, many of them were located in the State of New York.

Perhaps the most distinctive reason why the summer camp should have originated in America may be found in the American school calendar. In pioneer days, the American children were educated as they lived on farms and learned to help adults with necessary farm work. Schools were introduced for three months in the winter to supplement with "book-learning" the education that went on daily in farm and village life. Gradually school terms were lengthened. People also began moving into cities where children no longer had occasion to help their parents during the summer, but the school calendar had become fixed in custom, and schools continued to close.

The early schools needed no study of nature lore, manual training, handicraft, or other extra-curricular activities. All that was needed to round out the education of farm boys and girls was to teach them the "three R's." With little critical thinking educators took this same traditional school into the city and standardized it.

The school, with its emphasis on fundamental academic skills, at first was just a supplement to education. However, it gradually began to assume that it had responsibility for total education, but no provision was made for summer months. European school calendars did not grow out of pioneer traditions, and many schools there operate a year round schedule with brief holiday periods.

The rapid urbanization of population brought many individuals face to face with the problem of how to give the city child an educational heritage which was not readily available in the city. Porter Sargent, in his book entitled Summer Camps, published in 1931, suggested that the summer camp fill this gap in modern education. He said of our educators that "they have lost sight of the fact that all training in crafts, nature, resourcefulness, initiative and executive capacity, that belonged to three or four generations ago has passed, that home and community life is no longer what it used to be, and that a void has been left in the life of the growing boy or girl." He further stated that, "In education the elaboration of book learning, of formal school methods removed from life, gave us something that looked well from the point of view of the pedagogue, but lacked the life-giving elements of the earlier education. So into neglected period of the summer months has come the summer camp with its opportunities to restore something of the essential elements of what made our grandfathers and grandmothers what they were."

Unfortunately many of these early camp programs were out of reach of the poor and impoverished young city child. Living in tenements and slums the prospect of a week or two living out-of-doors was definitely a remote possibility. It was for these countless city dwellers that institutional and agency camps were developed. One early agency type camp was Camp Dudley, a Y.M.C.A. camp, located on Lake Champlain, and since 1891 the oldest camp with a continuous existence. This is another legacy that New York State has to offer outdoor education. Fresh Air Camps were established by funds sup-

ported by the old Life Magazine and by the Herald Tribune newspaper organization. The first agency camp was developed by the Children's Aid Society of New York in 1872. Five years later, in 1887, that agency camp came under the sponsorship of Life's Fresh Air Fund. John Amos Mitchell who organized Life Magazine in 1883, was responsible for starting Life's Fresh Air Fund. The first announcement pertaining to the camping activities appeared in the August 11, 1887, issue of Life Magazine.

The Summer Camp Becomes Academic

Dr. William Heard Kilpatrick, a noted educator at Columbia University, wrote in a forward to Joshua Lieverman's Creative Camper, published in 1931, that "Educationally, the camp can be virgin soil. But something more is needed. To be free to move is one thing, to see where to go is quite another. Mere absence of academic restraint does not suffice. Society which surrounds and pervades the school can go also to the woods. A camp can be as conventional as a preparatory school. Most camps too much reflect the conventional outlook."

Although camping started unfettered by schools, conventions, and traditions, and was "yirgin soil" as Kilpatrick stated, camps were run by members of society, and it was ineyitable that social conventions and traditions should creep in. School teachers and retired military personnel were the only ones free during the summer months to operate the camps. Consequently there was a struggle between ideas of primitive simplicity and those of stimulated competition and regimentation along the lines formally fixed by the camp staff prior to the campers' arroyal. Bells rang, bugles blared, and the schedule of camp activities was put into action in accordance to the way a school was operated or a military installation administered. Such regimentation was a copy of military training or school operation. In 1918, Florence Marion Lansing, in an article appearing in St. Nicholas Magazine, entitles "Going Into Summer Training," wrote that "you don't do things when you happen to, because they occur to you and you feel like doing them, and leave them out when you don't. From the minute the first bugle blows until you drop

asleep to the sound of 'taps' your day is planned. There were things we meant to do, and the day was planned so as to get them all in."

The very growth in size of camps tended toward more formal methods. This was recognized by Dr. George L. Meylan, professor of physical education at Columbia University, and first president of the Camp Directors Association of America. Dr. Meylan felt that learning by doing was the educational feature of the summer camp, and that the camp deserves a permanent place in American education because of the large contribution it could make in the development of resourcefulness and self-reliance. He pointed out that the summer camp has more possibilities for social and moral training than the home, church or school because it combines all of the advantages of these three agencies and other advantages which are characteristic of camp life.

Another influence on the movement toward education in the camp program was that of Life Camps, Inc., which had its beginning in the spring of 1887, under the sponsorship of the old Life Magazine. At that time, and up to 1925, the name of the organization was Life's Fresh Air Fund. During the thirty-eight year period, Life's Fresh Air Fund operated two places for children known as Fresh Air Farms. This was part of the movement, chiefly in New York City, known as Fresh Air Work. Many under-privileged children were taken to the two places operated in Branchville, Connecticut, and Pottersville, New Jersey.

In 1924, a prominent social service organization recommended that a survey be made of Life's Fresh Air Fund activities, and Lloyd B. Sharp, then of Columbia University, was requested to make the study and recommendations. His services were employed by Life's Fresh Air Fund beginning January 1, 1925.

A complete reorganization of the program resulted in a shift from a purely charitable vacation idea to a sound educational basis, emphasizing individual care and the development of children. The name was changed to Life Camps, and the corporate name, Life Camps, Inc., was not employed until the fall of 1936.

The reorganization of Life Camps in 1925 spearheaded a definite movement to reorganize that type of activity for youth in all kinds of camps. The chief effort, at the beginning, was with the welfare camps. The movement started in New York City, but it spread rapidly throughout the country. Life Camps and the people associated with it were called upon often for a description of the program and methods of operation.

In Life Camps, a careful program of experimentation and testing was carried on, and each new advance was thoroughly tested and appraised. For the first two seasons, following Sharp's appointment to the survey, the program followed the traditional departmentalized approach. Experimentation was begun in 1927 with the small group process, and the first small camp or outpost camp was established. The results in individual growth and development were so successful and effective that the entire program was soon reorganized and conducted on a small group plan in both of the children's camps.

Educators became interested in the Life Camp program. A variety of articles about the camps began to appear in the literature. Educators visited the camps in increasing numbers and began to see the possibilities for the field of education.

The Bureau of Attendance of the New York City Schools, in 1934, joined with Life Camps in an experiment. Sixteen boys who had been sent to the Parental School Home of New York City were sent to Life Camps for the summer. It was highly successful, and, as a result of the experimentation with the school delinquent youth, the Bureau of Attendance completed a thorough study of all camp records to find other influences that an experience of this type had on youth. Lack of support by the Board of Education curtailed all further experiments.

Further reorganization of the Life Camps program took place when, in 1936, Time, Inc., purchased the old Life Magazine. From 1936 to 1940, there was a period of increased acceptance on the part of educators to consider camping as a part of the school curriculum.

A four year project was carried out in cooperation with the New York City Schools from 1939 to 1942. Mrs. Johanna M. Lindlof, then a member of the City Board of Education, created the Johanna Lindlof Camp Fund to help finance the project. The public schools of New York City sent one hundred ten children to Life Camps each summer for a four year period. The results of this experiment were significant in terms of the social adjustment and academic skills improvement. All of this activity earmarked the beginning of a movement known as Camping Education. It was Dr. Lloyd B. Sharp who first coined the phrase camping education as the literature will verify.

In 1934 and 1935, Dr. Sharp made extensive studies of over fifty school courses of study at the elementary and secondary levels in order to determine what part of subject matter areas could best be executed by direct experience outside the classroom. As a result of this research, some definite conclusions and directions for the future of the outdoor education program were evolved. It was projected, on the basis of these studies, that the first place to start was in the immediate area of the school, just for five minutes, for ten minutes, for half an hour, for an hour, or for part of the day provided there was careful planning for the effective use of this time. Classroom study through experience outside should first be a part of the application of this program. Out of these studies and experiences evolved the term known as outdoor education. The chronological nomenclature evolution was first camping education, then school camping, and finally outdoor education. The terminology used in the twenties and early thirties was camping education. Undoubtedly the influence of the camping movement and the availability of camp resource personnel and facilities and individual educators with a camping orientation were responsible for the use of this term. Camp facilities were utilized by the schools as sites for their outdoor classrooms. The term camping education presented a significant limitation in the fact that a class had to leave the school campus and community for at least an overnight resident experience as a part of their outdoor program.

The terminology used during the forties and early fifties also presented the same limitation. The term was public school camping, and it implied a departure from the school and community for resident experiences in a natural setting.

From the mid-fifties to the present time the term outdoor education has been used in many situations. The term is broad and eliminates the necessity of leaving the school site or community. However, it does not exclude the resident experience.

Outdoor Education Interpreted

The major proponent of outdoor education during its developmental period was the late Dr. Lloyd B. Sharp. His professional activity in outdoor education began in 1924 and culminated with his death in 1963. He is considered by many to be the father of the outdoor education movement. Dr. Sharp defined outdoor education as all of that learning included in the curriculum in any subject matter area and at any grade level that can best be learned outside the classroom. Sharp contended that subject matter areas should be divided on the basis of where the desired learning can best take place. He further asserted that the keynote of outdoor education was efficiency in learning. Sharp extended the following thesis in the examination of any subject matter area or discipline:

"That which can best be learned inside the classroom should be learned there and that which can best be learned in the out of doors, dealing with native materials and life situations, should there be learned."

It was his position that outdoor education was not a special subject nor a separate discipline. It transcended all learning, all subject matter, all disciplines, helping to make the learning process more vital and meaningful to the student. The mere application of the stated thesis would facilitate the formulation of an outdoor education program--a program tailored to meet the needs and interest of each individual class. Sharp was concerned that "canned programs," programs with standardized activities, be avoided. He also reported that outdoor education should begin at the

kindergarten level and continue on a short term basis through the grade levels until a point was reached where both teacher and students were ready for the extended experience in a resident situation.

Outdoor education begins as soon as one steps outside the school door. It begins on the school steps, on the sidewalk, in the school yard, in a nearby park, or elsewhere in the community. It might be for as short a period of time as five minutes or a half hour, or it might be for as long as a half day, or a full day. The length of time depends upon the nature of the subject matter taught and the preparation of the teacher. It can be expanded to several days or a full week.

The goals of outdoor education are identical with those of the total educational program. However, they are approached somewhat differently in the outdoor laboratory. Perhaps the difference lies within a more suitable climate for effective study of the interrelationships of all those aspects of reality that condition life. This would be in contrast to the sometimes stale traditional education where censored reality prevails.

Outdoor education activities are types of out-of-classroom activities in which teachers and students deliberately engage to improve or enrich their in-the-classroom program and which, at the same time, place primary emphasis on the process of inquiry. They are a means of acquiring knowledge and understanding through contact with the natural and cultural resources in the outdoor, or natural environment. Investigative procedures characterize a contemporary outdoor education program. Observation, experimentation, and interpretation are its vital ingredients.

Essentially, the outdoor education program emanates from the classroom and is planned to meet the needs and interests of the students. Because of regional and geographical conditions, school programs differ and consequently so should the outdoor education programs. No two programs need to be alike.

Research in educational psychology discloses the advantages of direct experience in the enhancement of understanding and retention. Therefore, we should be willing to take the necessary steps to implement a program rich with direct experiences for each and every student. Current research on learning indicates that a person's ability to attain and retain concepts, to develop insight, in any situation relates directly to three dimensions of past experience: (1) having met the same or similar concepts in a variety of situations; (2) having related facts to principles; (3) having acquired concepts and practiced using them in different contexts. Outdoor education capitalizes on these learning principles.

How are they applied? First, the students begin with a background of general knowledge in the area to be studied. They learn how to give collected data significance in terms of a selected problem. They formulate hypotheses as directed by the scientific method and proceed to prove or disprove. Very often the data is carried back into the classroom to continue inquiry--that of further investigation and research.

In an outdoor education program the teacher becomes a director of inquiry. The outdoor teacher guides students both in their quest for problems and in their development of procedures for seeking solutions. Answers are not immediately given by the teacher to questions raised in the field. In many instances answers are obtainable from a reference or field resource book; at times they are self-evident because of the physical characteristic of the phenomena observed. The outdoor teacher helps the student realize that it is through his senses by which he discovers data. To touch, taste, smell, and hear basic physical characteristics assists the learner in the solution of the problem.

It has been said that we in education are too often long on telling and short on doing. Perhaps this is true in more situations than we care to admit. It is a very secure position to be a two-by-four teacher, safe between the two covers of a book and the four walls of the classroom. Outdoor education is, realistically, nothing more than good teaching and good teaching means effective utilization of

available resources.

This departure from the classroom is necessary if the students are to learn more effectively, for they can only observe and record primary data through firsthand experience with subjects. The role of the teacher in an outdoor setting shifts from that of a formal leader to that of a consultant. He becomes an advisor to small groups and individuals working independently.

In the small group opportunities for involvement in the learning process are magnified. Identification of disinterested students is facilitated and motivation for learning can be enhanced through capitalizing on the diverse interests of students in the small group. Without doubt, we learn more efficiently as individuals, and, as the group becomes larger and larger, the efficiency of learning decreases.

Where should we begin a process of education which might foster favorable attitudes toward an informed participation in conservation and preservation programs. It is my contention that we should begin in the schools at the kindergarten level. The program should not be one of indoctrination but rather one of direct experiences leading to attitudes, values, and appreciations of natural resources and open space.

The Uniqueness of Outdoor Education for the Emotionally Handicapped

A survey of outdoor education has been necessary in order to best understand how participation in such a program might be beneficial to the emotionally handicapped child or youth. The outdoor education program is only one of the many desirable programs for helping emotionally maladjusted children and youth. It should be pointed out from the beginning that the outdoor education setting may not be the panacea for all emotionally handicapped children. However, there is reason to believe that a large percentage of them will respond to the informal, activity-centered, and non-punitive program of a sound outdoor education program. It should also be pointed out that the outdoor setting is not the only therapeutic treatment for any given child, and in most instances, should not be considered the major

treatment. The home community should be the basic treatment center, and the outdoor education program becomes an appendage of this center. The outdoor education experience should be supplemental and be integrated with programs involving therapeutic treatment back in the home community.

I do not profess to have a great deal of knowledge about the emotionally handicapped. However, as an outdoor educator, I have been witness to many successful programs involving the emotionally maladjusted. I do know that the average child is usually able to function very adequately in an outdoor education program. He has self confidence and is able to cope with the tensions and anxieties of group living. He is able to get along with his peers and teachers. The average child will approach new activities with interest and self confidence in his own ability to be successful. Such commonplace things such as competition and challenge motivate him to heightened activity.

This is not true for the child who is emotionally disturbed. Usually this individual has failed in some aspect of both personal and social adjustment. He usually lacks the social skills which will enable him to get along with his peers or adults. His ego is not intact, and he is not able to cope with situations calling for ego strength and resourcefulness. Because of these characteristics the conventional outdoor education program will not work for the emotionally handicapped child. One departure will be the emphasis placed on the resident experience rather than on the short term on-site outdoor education experience. The resident outdoor education experience can become a twenty-four-hour-a-day controlled environmental situation. It can minimize the feeling of institutionalization which in many ways appeared threatening and hostile to the emotionally handicapped child. It is true that in a resident outdoor education center the child is under continual supervision. However, it can be sustained without giving the child a feeling that he is not free. The child should be allowed to volunteer for the outdoor education experience, and this procedure will promote the incentive to adjust to the living situation. Outdoor educators working with this type of child should make every effort to keep the

environment from whence the child came.

The outdoor setting of the resident program will provide a wide variety of opportunities that will appeal to the emotionally handicapped child. There is the element of high adventure and discovery as well as that of fun in learning. Programs in the past have discovered that certain departures from the conventional program were necessary in order to be successful. Notable among the early experiments with a special population of school students was the Community School Work-Learn Camp Experiment conducted by the Department of Public Instruction in cooperation with the Department of Conservation, the W. K. Kellogg Foundation and the Ann Arbor, Bay City and Dearborn Public Schools, all in Michigan. This experiment provided new educational experiences for 60 boys from three high schools who spent a semester at the Mill Lake Camp from February to June, 1951. The students were regarded as potential drop-outs, or in many instances, had already left school. The project constituted a test of whether it was possible to carry forward a program of secondary education that would breathe new life and spirit into the education of boys who found the conventional school program unhelpful and unsuited in many ways to their own personal aptitudes and needs. The work-learn experiences involved such things as camp improvement, repair of equipment, improvement of timber stands, tree planting, game management, road construction, and other miscellaneous work projects. The instructional activities ranged from consideration of health and safety, survival in the out-of-doors, conservation and science, home and family living, and communications, to requested academic activities such as math, history, and English. The aim of their recreation program was to offer a broad range of activities through which the boys would develop skills and appreciations that would contribute to life enrichment.

There were changes in attitude, and ninety percent of the boys interviewed said they had learned to get along better with others. The opportunity to participate in the planning of the camp program, the living experiences in the cabin groups, and the many opportunities for group action seem to contribute to the improvement

of social behavior in getting along together. Attitudes toward themselves, individual responsibility and leadership, attitude toward parents and racial attitudes significantly improved. Over eighty-two percent of the boys planned to return to school. More than ninety percent of the boys said they would want their own children to complete high school. There were significant changes that represented a high degree of success with boys who had many problems including emotional instability.

Similar programs were conducted by the Michigan Department of Public Instruction at the Mill Lake Camp with equal success.

The outdoor education program can provide freedom from pressure and simplicity of living. In this type of setting the emotionally handicapped child can confront basic realities in the form of real life problems that have to be solved as part of the total living experience. The small group approach in the outdoor education experience necessitates that the child become involved directly with the successful maintenance of the daily living of his peers. Dr. Sharp realized this many years ago when he advocated the decentralized approach in camping and the small group process in outdoor education. According to Sharp the basic ingredients of any good outdoor education program should involve the following: food, shelter, self occupation, group relationships, and spiritual uplift. Concern for those ingredients is also necessary in any sound program for living a worthwhile life.

Living with a small group of his peers and in close association with trained, mature and understanding outdoor teachers, the child has a better opportunity to develop good group relationships than he would in the classroom.

B. K. Smith, in his provocative report entitled "The Worth of A Boy," points out that "these children have been unable to compete in a school program because of their emotional difficulties. They fail to learn because they cannot see any relevancy in academic achievement. These children are opposed to school because they consider it an unnecessary requirement imposed by an unrelenting authority." Learning in the outdoor center takes on a different aspect as the situation calls

for skills in math, science, social studies, English, and other disciplines in order to meet the needs of daily living. Young people need to know how to meet their own goals in order to see the significance of education.

Another important factor is that the resident outdoor experience is a total therapeutic situation. All aspects of the living environment in a resident outdoor center are functioning in an integrated way toward helping the child solve his emotional problems. Every teacher and resource person, every activity, and every situation is tuned to treatment because of the twenty-four hour natural living condition. The opportunity to observe the child on a twenty-four-hour-a-day basis enables the leader to gain insight into the cause of the emotional disturbance, the group relationships, and the capability of the individual to relate and to develop.

There are some disadvantages that must be pointed out as well as the advantages of utilizing the outdoor resident setting for emotionally handicapped children and youth. One of the important considerations is that not all children and youth enjoy or want to live in the outdoors, and they have little appreciation for the natural environment. Some of them feel more secure in the more familiar environment of the community. Some are genuinely afraid of storms, wild animals, insects, and the vastness of open space. Care should be taken that these children or youth are not forced into an environment that will intensify their emotional problems.

Another disadvantage or limitation concerns the length of time spent in the outdoor resident setting. One week may not be sufficient for significant changes in behavior to accrue. For example, a successful program for troubled youth is conducted by the Salesmanship Club of Dallas, Texas, at Camp Woodland Springs, Hawkins, Texas. Troubled and disturbed boys may be in the camp setting for as long as 18 months to 24 months. Even this two-year period of resident experience is considered by some to be not long enough despite the ninety percent rate of success

in terms of social and vocational adjustment. Camp Wediko, located in New Hampshire, serves 60 boys from ages 9 to 14, for a period of seven weeks. Guidance Camps, Inc., is responsible for the operation of the camp, which is underwritten by fees, charitable funds, and the Community Fund.

In Anoka, Minnesota, the 680 acre Bar None Ranch serves both emotionally handicapped and normal boys and girls between the ages of 9 and 17 who use the facilities on a year-round basis. This program is sponsored by the Volunteers of America.

The University of Michigan Fresh Air Camp is an example of a center sponsored by an institution of higher learning. It is operated by the University and provides a real laboratory for university students majoring in special education. Here they have an opportunity to work first hand with emotionally disturbed boys and girls and learn to understand and deal more effectively with the disturbance of the child or youth as it is likely to appear in a real life situation. This is a good program for it attempts to meet another limitation--namely, that of a lack of qualified leadership for outdoor education with the emotionally disturbed. In order for a program for this special population to be effective, the outdoor leaders must be mature, well trained, understanding, and patient.

Conclusion

The increasing interest in outdoor education resident experiences in a camp setting for children and youth who are emotionally handicapped emanates from society's mounting awareness of the juvenile delinquency problems in the nation. Many of these people need to have continual and personal guidance and individual help if they are to become fully integrated citizens. Evidence indicates that the resident experience in a camp setting offers unlimited possibilities in the provision of therapy for many of these children and youth. The opportunity for resourcefulness and self reliance is high. However, evidence of the therapeutic

values of the outdoor living experience is hard to obtain. Follow-up studies of participating children and youth indicate strong evidence of the positive values of therapeutic outdoor education experiences. More research is definitely needed. Most of the data as to the value to the participants in such programs has been subjective in nature. There have been some programs that have yielded objective data. However, these programs have been early pioneer ones such as the Life Camp program and the Michigan experiments with work-learn camping. There is a need for more research as to the types of programs, the leadership techniques employed, and the physical facilities and setting that are the most successful.

There needs to be an emphasis placed on the training of personnel with the background and experience that will most effectively deal with the problems of the emotionally disturbed in an outdoor residential setting. The responsibility is clearly vested with those institutions which prepare young people to work with this segment of our special populations.

Adequate follow-up programs are needed as the participant returns to the community and home. Much of the value of the outdoor living experience may be lost if the child or youth returns to the same problems of the community and home that caused the disturbance in the first place.

There should be more research done on the development of evaluation techniques and the application of such techniques in the outdoor education setting.

The outdoor education process has quite a number of contributions to make to the educational process. They include special techniques in observation, investigation, informality, integration, meditation, creativity, youth fitness, and the inseparable education of mind and body. Regardless of the technique employed, there is one basic principle which must be recognized. This principle is that any learning that takes place is always the result of what happens with the child or youth, how he organizes his own system of ideas and what he does about the experience. Outdoor education is just one of various methods of teaching and learning

that creates within the student a basic interest in learning. It provides him with a basic set of experiences that will help him gain a fuller understanding of life around him, the interrelatedness of things found in the natural environment, and a knowledge of man's interdependence with the physical world. This is our challenge whether we work with normal children and youth or with the emotionally handicapped. If we care enough about the young people entrusted to our care and guidance, then we will cast off the shackles of traditionalism and proceed with creativity, imagination, and innovation toward a quality of life for all of our future generations whether they are normal and average or if they are members of special populations.

WHAT REALLY IS OUTDOOR EDUCATION?

by Dr. Rillo

Summary

The group was involved with some of the techniques of teaching in the out of doors, Particular emphasis was placed on the data gathering and the physical characteristics of the objects to be learned. This was done directly using the Clue Chart approach, blind folding the students in order to enhance perception and using such devices as wire coat hangar rings for bird analysis; the use of the increment borer for determining the age of a tree. Such materials were dissiminated as clue charts, lesson plans for stump scouting, material on determining temperature in different places, etc.

The over all emphasis was on the premises that methodology is more important than fact.

WHAT REALLY IS OUTDOOR EDUCATION?

by Mr. Weeks

Summary

Emphasis would be placed on the fact that the world of nature is like the communities of man. We all depend on others. In schools, teachers, students, and administrators depend on janitors and food service people. Birds and insects depend upon the fact that trees are there. Trees create situations where certain plants can live. It's a cycle; everyone is dependent. The relevance of death to life was explored. A dead tree was the home of a plant. The elm tree disease was brought from Europe by man. The role of death, life, man, plant, sun, etc. were all involved in this exploration.

TWIN VALLEYS SUMMER PROJECT

By Ernest Coons

Twin Valleys Outdoor Education Center, a 722 parcel of land owned by the State University College at Plattsburgh, is the base for a very different kind of program that we offer in the summer. During the three years of operation in which we try to manipulate behavior of children we have made a few mistakes. The intent of this program is to take disadvantaged kids, children who do not function well in a classroom, high truancy records, behavioral problems, not working up to potential, etc.,-and change their attitudes and behavior. These children, who reside in 11 school districts, live at Twin Valleys. Eighty percent of the students selected are disadvantaged; twenty percent are classroom leaders. We leave in charge these 20 percent as leadership potentials. The eighty percent you might not want in your classroom, but we do at Twin Valleys.

Twenty-four boys and twenty-four girls come down in a two-week time block. We have tried longer blocks, but two weeks is sufficient for the time that we need. The program objectives are: a heightened self concept and a change towards school and the learning process. It is a school program; it belongs to the school.

We keep the requirements of a normal resident program for these kids. We keep it as natural as possible.

Twin Valleys has a weather station, a little store that the kids operate, a main building, four classrooms, cabins and tipis.

We run a normal camp type program. This camp truly will help you know yourself better, and it works in changing attitudes.

Anything that we do is supplemented and it becomes a natural outgrowth unlike today's learning techniques.

The kids participate in a variety of activities, such as: art, boating, photography, jewelry making, etc. The kids set their own tables, clean up after themselves, plan some of their own programs; in other words they are responsible for themselves and others with some supervision.

The kids go on field trips, swimming (surprisingly 50 percent have never swam in Lake Champlain), to movies, the college science lab; they are exposed to many different places (restaurants) that they might never have been to or seen.

It is chance for a child to be left alone and find out for himself "where he is going in life."

This year we offer a teenage element, a day camp element, a resident camp for children in the surrounding school districts. They learn by doing, they learn by teaching the skills they have acquired at camp to others.

A child can learn on its own and find it an enjoyable experience.

The child rated himself when he came to camp, the staff rated him also. At the end of camp, the child, the staff, and the guidance counselor from the school the child was from, rated the child. A significant improvement was noted in the children.

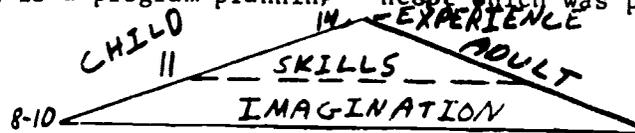
We had kids who saw themselves differently. This approach can be done by any school.

Planning the Program

by Ernest Coons

This proceedings report represents a generally summary of three sessions that were conducted with the participants of this institute with regards to the needs of emotionally handicapped children in planning the outdoor education program. A general discussion was first conducted on what outdoor education is. Supplementary material on this subject will be found in the appendix of these proceedings.

Secondly, following is a program planning concept which was presented.



This concept shared the importance of planning an outdoor education program with an imaginative theme for young children up to the general age of 9 or 10 years old. Then the need was made by this concept that the child is in early adolescence and is primarily concerned with skill acquisition and programs based on this theme would have a good chance for success as it would be generally consistent with the needs of the students. At maturity or approximately 14 years of age a child is requiring additional experience in an attempt to directly involve himself in all elements of the program and program implications without the major risk of failure, but with the dimension of adventure. General themes resulting from the discussions of these groups indicated that the following points should be considered in planning an outdoor education program for the emotionally handicapped.

1. The program should be planned for the natural teacher with a natural classroom.
2. Any others you are working as program consultants should directly work with and for the classroom teacher as the classroom teacher is the primary source of program information as to the specific needs of the children and needs of the curriculum.

3. The program should be planned to meet the specific and individual needs of the emotionally handicapped child and there is a great range of difference in this selected group of children.

4. The program should start in the child-known home-school surroundings and generated sequentially from and as the needs of the program and the readiness of the child facilitates this. It was discussed as a primary point that emotionally handicapped children should not be thrust in new unknown situations until there is a feeling of a high degree of success for the child and teacher in these new experiences.

5. The program should be as flexible as possible requiring as much input from pupil and teacher as their abilities will allow.

It was shared, as a result of this discussion, that the outdoor education experience is a three step process starting with planning the program and evaluation-reinforcement making up the total outdoor education experience. To eliminate one of these steps in the learning process will directly result in part of the necessary learning not being offered.

Summary: Financing the Program

by Charles Matkowski

Costs for implementing an outdoor education program for the emotionally handicapped should be minimal. The following should be considered.

1. Using existing monies and faculty and just redistribute them to the needs of the outdoor education program. Example: science materials could be used by outdoor education and the science department.
2. Bring in consultants to train the faculty
3. Take advantage of free consultant services and materials.
4. The possibility of Federal Title monies is quite limited.

It was noted that in planning these programs, one should take into consideration teachers' contracts, especially related to overtime pay for weekends or overnights.

See the appendix for additional resources.

Resources Available

Irwin Rosenstein

It is interesting to note that one of the definitions of the word resources is "the actual and potential wealth of a country: natural resources, human resources." In applying this term to outdoor education we also find that utilization of natural and human resources are essential if the program is to be a successful one.

Human resources are the foundation of any program of outdoor education and the classroom teacher should assume a major responsibility in the planning and implementation of the program. It is also of utmost importance for other members of the school faculty to become actively involved in the program, including among others, teachers of special education. This type of coordinated approach makes greater use of the interests and expertise of the total school staff and is more likely to result in a program that meets the needs of those children involved.

The classroom teacher, particularly in respect to resident programs of outdoor education, should work cooperatively with other classroom teachers interested in outdoor education, as well as faculty members who teach related subjects, such as art, music, physical education, homemaking and industrial arts. Other personnel from schools, colleges and universities, and from state and federal agencies can serve as human resources and contribute to the value of these educational experiences.

The Outdoor Education Specialist

The planning of a successful program of outdoor education, whether it be an on-site, field trip, or resident experience, requires knowledge in such areas as curriculum development, instructional techniques, transportation procedures, equipment and supplies, finances, facilities and state laws. Therefore, it can be very helpful to have such a resource person on the faculty to assist other teachers and interpret the program to the parents and the community. A number of school districts in New York State have such a person available. (A listing of some of the school districts having such a faculty member was presented.)

Colleges and Universities

There are a number of colleges and universities throughout New York State that have faculty members who possess considerable knowledge and experience in various aspects of outdoor education. School districts planning and conducting programs of outdoor education should contact institutions of higher learning in their area, identify these resource people and request their services as a means of enriching the program. (The speaker identified some resource personnel and the institutions of higher learning that they represented.)

Community Leaders

Resource personnel for outdoor education are available in all communities. These people may be employed by local, state, and national agencies. They may be members of the staff of state or federal governments. They may be members of local organizations interested and concerned about the outdoors. They can be parents and citizens who pursue interests in outdoor recreational activities and citizens who pursue interests in outdoor recreational activities. It is well worth the time and effort to identify such leaders and maintain a current directory of the services they provide.

The utilization of human resources who possess expertise in specific aspects of outdoor education can enrich programs significantly. Not only can such people be of value to teachers, but having someone outside of the school teach a specific activity or subject can generate a great deal of interest and enthusiasm among children.

Some guidelines for using resource personnel most effectively include:

1. Evaluate the total program to determine how resource personnel can best be used.
2. Identify and develop a list of individuals in the community who could serve as resource personnel.
3. Contact the resource people desired to determine their interest and availability to become involved in the program.

4. Specific information concerning the type of resource service desired, time, place, instructional procedures, and financial remuneration, if necessary, should be given for the resource people involved.
5. Resource people should be involved in the preplanning of the program whenever possible. This should involve spending some time in the classroom meeting the children and learning about the program.
6. Resource individuals should work cooperatively with teachers and contribute to their competence.
7. The contributions of resource personnel should be evaluated after their involvement to determine the significance of their contribution to the learning process.

There are numerous instructional laboratories that are available for learning and living in an outdoor environment. In fact, education beyond four walls is limited only by the imagination and creativeness of the teacher. Numerous outdoor areas may be used to vitalize the school curriculum. These natural resources may be located on the school site while others may necessitate field trips to places in the community or living at a resident outdoor education center. The number and type of these natural resource areas will vary according to the geographic area of the school district or educational agency. Some of the educational laboratories on a school site that have possibilities for outdoor education include:

- Lawns
- Woods
- Water Areas
- Garden Areas
- Nature Trails
- Weather Station
- Bird Feeding Stations
- Undisturbed natural areas

Some community resources which may be used for outdoor education include:

- Sewage disposal plants
- Water purification plants
- Lakes, rivers, streams and beaches

- Parks or city blocks
- Nature centers
- Farms
- Private and agency camps
- Museums and zoos

There are many organizations and agencies at the national, state, and local levels which can provide resource assistance for outdoor education. (The speaker identified specific organizations and agencies, including their addresses.)

Printed materials, including books, professional journals and newsletters on outdoor education are also available as resource materials. (The speaker discussed specific publications that would be helpful to teachers and administrators who are interested in learning more about outdoor education in the school curriculum.)

I have attempted to show that there are numerous resources available for outdoor education. Human resources are of utmost importance because these individuals will provide the leadership that is essential to the success of any outdoor education program. Based upon my experience of working with people interested in using outdoor education as an instructional process, I believe you will find these individuals extremely knowledgeable, enthusiastic, and eager to share their expertise.

Natural resources, which serve as the outdoor learning laboratory, are numerous and can be found in rural, suburban and urban environments.

More and more printed resource materials are becoming available each day and this material not only contains worthwhile information on curriculum content and teaching techniques in outdoor education, but also identifies existing programs which have proven to be successful.

There are also many resources and materials available from national, state and local organizations and agencies interested and involved in outdoor education.

Resources for outdoor education are available; take advantage of these resources and by doing so you will not only improve your own knowledge of this interdisciplinary approach to education but you will provide your students with real and relevant experiences that will help them to better understand the world in which they live.

SELECTED BIBLIOGRAPHY IN OUTDOOR EDUCATION

- American Association for Health, Physical Education, and Recreation, Outdoor Education for American Youth. Washington, D.C.: AAHPER, 1957.
- American Association of School Administrators, Conservation-In the People's Hands. Washington, D.C.: AASA Commission on Conservation, 1964.
- Athletic Institute, Planning Facilities for Health, Physical Education and Recreation, Rev. ed. by Participants in National Facilities Conference. Chicago, Ill.: The Athletic Institute, Inc., 1956.
- Bale, R.O., Conservation for Camp and Classroom. Minneapolis, Minn.: Burgess Publishing Co., 1962.
- _____, Outdoor Living. Minneapolis, Minn.: Burgess Publishing Co., 1961.
- Bathhurst, Effie G. and Hill, Wilhelmina, U.S. Department of Health, Education and Welfare, Office of Education, Conservation Experiences for Children, Bulletin 1957, No. 16.
- Brehm, Shirley A., A Teacher's Handbook for Study Outside the Classroom. Columbus, Ohio: Charles E. Merrill Publishing Company, 1969.
- Brightbill, Charles K., Man and Leisure. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960.
- Brown, Albert W., "The Academic Aspect of Outdoor Education," Extending Education, VI, No. 1, September 1961.
- Brown, Robert E., and Mausar, G.W., Techniques for Teaching Conservation Education. Minneapolis, Minn.: Burgess Publishing Co., 1964.
- Burns, Gerald P., Programs of the Modern Camp. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1954.
- Clarke, James Mitchell, Public School Camping. Stanford, California: Stanford University Press, 1951.
- Clawson, Marion and others, Future Land Use in the United States. Resources for the Future, Washington, D.C., 1963.
- Conservation Education in American Schools. 29th Yearbook. Washington, D.C.: American Association of School Administrators, 1951.
- Dimock, Hedley S., et al., Administration of the Modern Camp. New York: Association Press, 1958.
- Donaldson, George W., School Camping. New York: Association Press, 1952.
- Freeberg, William H., and Taylor, Loren E., Philosophy of Outdoor Education. Minneapolis, Minn.: Burgess Publishing Co., 1961.

- _____, Programs In Outdoor Education. Minneapolis, Minn.: Burgess Publishing Co., 1963.
- Freit, Edwin L., and Peterson, Del G., Design for Outdoor Education. Yakima, Washington: P.S. Printers, Inc., 1956.
- Gabrielsen, M. Alexander, and Miles, Caswell M., Sports and Recreation Facilities for School and Community. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1958.
- Hamm, Russell L. and Hason, Larry, An Ecological Approach to Conservation. Minneapolis, Minn.: Burgess Publication Co., 1964.
- Hammerman, Donald R., and William M., Teaching in the Outdoors. New York, N.Y.: Association Press, 1951.
- _____, Outdoor Education--A Book of Readings. Minneapolis Minn.: Burgess Publishing Co., 1968.
- Hein, Lucille E., Enjoying the Outdoors with Children. New York: Association Press 1966.
- Hug, John W. and Wilson, Phyllis J., Curriculum Enrichment Outdoors, Evanston, Ill.: Harper and Row, Publishers, 1965.
- Irwin Frank L., The Theory of Camping. New York: A.S. Barnes & Co., 1950.
- Jeager, Ellsworth, Wildwood Wisdom. New York: The Macmillan Company, 1957.
- Kelly, Earl, In Defense of Youth. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1962.
- _____, Education for What is Real. New York: Harper & Row, Publishers, 1947.
- MacMillan, Dorothy Lou, School Camping and Outdoor Education. Dubuque, Iowa: William C. Brown Company, Inc., 1956.
- Mand, Charles L., Outdoor Education. New York: J. Lowell Pratt and Company, 1967.
- Manley, Helen, and Drury, M.F., Education Through School Camping. St. Louis, Mo.: The C.V. Mosby Company, 1952.
- Marsh, Norman F., Outdoor Education on Your School Grounds. Sacramento, California: Office of Conservation Education, 1968.
- Milliken, Margaret, Hammer, Austin F. and MadDonald, Ernest, A Field Study Manual for Outdoor Learning. Minneapolis, Minn.: Burgess Publishing Co., 1968.
- Miracle, Leonard, with Decker, Maurice H., Complete Book of Camping. New York: Outdoor Life, Harper & Row, Publishers, 1961.
- Nash, J.B., Philosophy of Recreation and Leisure. Dubuque, Iowa: William C. Brown Company, Inc. 1953.
- _____, Recreation: Pertinent Reading. Dubuque, Iowa: William C. Brown Company, Inc., 1965.

- Outdoor Recreation for America. A report to the President and to the Congress of the Outdoor Recreation Resources Review Commission, includes 27 supplemental reports. Washington, D.C.: U.S. Government Printing Office, January 1962.
- Peterson, Gunnar A., & Edgren, Harry D., Outdoor Winter Activities. New York: Association Press, 1962.
- Schramm, William, Classroom Out-of-Doors. Kalamazoo, Michigan: Sequoia Press Publishers, 1969.
- Smith, Julian W., Outdoor Education. Washington D.C.: AAHPER, 1956.
- Smith, Julian W., Carlson, Reynold E., Donaldson, George W., and Masters, Hugh B., Outdoor Education. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963.
- Stapp, William B., Integrating Outdoor and Conservation Education into the Curriculum. Minneapolis, Minn.: Burgess Publishing Co., 1964.
- Tilden, Freeman, Interpreting Our Heritage. Chapel Hill, N.C.: University of North Carolina Press, 1957.
- Thurston, Lee M., Community School Camp. Lansing, Michigan: Department of Public Instruction, 1950.
- Trillingham, C.C., Outdoor Education: A Handbook for School Districts. Los Angeles, California: Office of the Superintendent of Schools, 1954.
- Van Der Smisson, Betty and Oswald H. Goering, A Leader's Guide to Nature Oriented Activities. Ames, Iowa: The Iowa State University Press, 1965.
- Wilcox, Arthur T., ed., Outdoor Education: A Way to Better Living. Park Management Bulletin No. 6. East Lansing, Michigan: Michigan State University Press, 1957.

RESIDENT OUTDOOR EDUCATION
SELECTED BIBLIOGRAPHY

- Angier, Bradford. Wilderness Cookery. Stackpole. 1963. P. O. Box 1831, Harrisburg, Pennsylvania. 17105. \$4.95.
- Bale, R. O. Creative Nature Crafts. Burgess. 1959. 426 South Sixth Street, Minneapolis, Minnesota. 55415. \$3.25.
- Berger, H. Jean. Inspirational Poetry for Camp and Youth Groups. Burgess, 3rd ed., 1964. 426 South Sixth Street, Minneapolis, Minnesota. 55415. \$3.00.
- _____ Program Activities for Camps. Burgess, 2nd ed., 1969. 426 South Sixth Street, Minneapolis, Minnesota. 55415. \$5.00.
- Garrison, Cecil. Outdoor Education. Thomas. 1966. 301-327 Lawrence Avenue, Springfield, Illinois. 62703. \$9.50.
- Hammerman, Donald R. and William M. Teaching in the Outdoors. Burgess. 1964. 426 South Sixth Street, Minneapolis, Minnesota. 55415. \$2.95.
- Harty, William T. Science for Camp and Counselor. Association Press. 1964. 291 Broadway, New York, N. Y. 10007. \$9.95.
- Hillcourt, William. Field Book of Nature Activities and Conservation. Putnam, Rev., 1961. 200 Madison Avenue, New York, N. Y. 10016. \$4.95.
- Mand, Charles L. Outdoor Education. Pratt. 1967. 15 East 48th Street, New York, N. Y. 10017. \$2.95.
- Ormond, Clyde. Complete Book of Outdoor Lore. Harper. 1965. 49 East 33rd Street, New York, N. Y. 10016. \$4.95.
- Rodney, Lynn S., and Ford, Phyllis M. Camp Administration, Schools, Communities, Organizations. Ronald Press. New York, N. Y. 1971.
- Shuttlesworth, Dorothy E. Exploring Nature with Your Child. Denison. 1952. 321 Fifth Avenue, S. Minneapolis, Minnesota. 55415. \$4.95.
- van der Smissen, Betty, and Goering, Oswald H. A Leader's Guide to Nature-Oriented Activities. Iowa State. 1965. State University Press, Press Building, Ames, Iowa. 50010. \$3.95.

References for Supplemental Information

National

American Association for Health, Physical Education and Recreation, 1201 16th Street, N.W., Washington, D.C. 20036

American Camping Association, Bradford Woods, Martinsville, Indiana. 46151

American Forestry Association, 919 17th Street, N.W., Washington, D. C. 20035.

American Orienteering Society, 220 Fifth Avenue, New York, N.Y. 10001.

American National Red Cross, 17th and D. Streets, Washington, D.C. 20006.

American Youth Hostels, Inc., 20 W. Seventeenth Street, New York, New York. 10011

Association for Private Camps, 55 W. 42nd Street, New York, New York. 10036.

Athletic Institute, 803 Merchandise Mart, Room 805, Chicago, Illinois. 60654.

Boy Scouts of America, 2 Park Avenue, New York, New York. 10016.

Boys' Clubs of America, 771 First Avenue, New York, N. Y. 10017.

Bureau of Outdoor Recreation, Department of the Interior, Washington, D. C. 20025.

Camp Fire Girls, Inc., Supply Division, 450 Avenue of the Americas, New York, New York. 10011.

Conservation Foundation, 1250 Connecticut Avenue, N.W., Washington, D.C. 20036.

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

The Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

U. S. Geological Survey Department of the Interior, Washington, D. C. 20025.

U. S. Fish and Wildlife Service, Department of the Interior, Washington, D. C. 20025.

Young Men's Christian Association, National Board, 600 Lexington Avenue, New York, New York. 10022.

Young Women's Christian Association, National Board, 600 Lexington Avenue, New York, New York. 10022.

State

New York Section, American Camping Association, 342 Madison Avenue,
New York, N. Y. 10017.

New York State Association for Health, Physical Education and
Recreation, 24 Dove Street, Albany, New York. 12210

New York State Department of Environmental Conservation, 50 Wolf
Road, Albany, New York. 12201

New York State Education Department, Division of Health, Physical
Education and Recreation, Albany, New York. 12224.

New York State Department of Health, 84 Holla Avenue, Albany,
New York. 12208.

New York State Office of Parks and Recreation, State Campus,
Albany, New York. 12226.

New York State Outdoor Education Association, Box 42, Albany,
New York. 12201

New York State Recreation and Park Society, 180 East Post Road,
White Plains, New York, New York. 10601

Local

American Red Cross Chapters

Boys' Clubs

Boy Scouts

Campfire Girls

Catholic Youth Organization

Church Groups

Civic and Service Clubs

County Health Department

County Parks and Recreation Departments

Four-H Clubs

Girls Clubs

Girl Scouts

Jewish Community Centers

Sportsmen's Clubs

Young Men's Christian Association

Young Women's Christian Association

SELECTED RESIDENT EDUCATION CENTERS IN NEW YORK

The following facilities represent some of the resident outdoor education centers which have been utilized by school districts for outdoor education experiences. For specific information about these facilities and their availability to school district contact the coordinator of outdoor education at each center.

Outdoor Education Center
Fancher Campus
State University College at Brockport
Brockport, New York 14420

Outdoor Education Center
Franklinville Campus
State University College at Buffalo
1300 Elmwood Avenue
Buffalo, New York

Outdoor Education Center
Raquette Lake Campus
State University College at Cortland
Cortland, New York 13045

Outdoor Education Center
Ashokan Campus
State University College at New Paltz
New Paltz, New York 12561

Outdoor Education Center
State University College at Oneonta
Oneonta, New York 13820

Outdoor Education Center
Twin Valleys Campus
State University College at Plattsburgh
Plattsburgh, New York 12901

Outdoor Education Center
Star Lake Campus
State University College at Potsdam
Potsdam, New York 13676

Rogers Conservation Education Center
Department of Environmental Conservation
Sherburne, New York 13460

Mountain Lakes Camp
Westchester County Department of Parks, Recreation and Conservation
County Office Building
White Plains, New York 10601

Holiday Hills
YMCA Educational Center
Pawling, New York 12564

Camp Chingachgook
YMCA Camp
13 State Street
Schenectady, New York 12305

Frost Valley YMCA Camp
Claryville, New York 12725

Camp Onanda
YWCA
175 Clinton Avenue North
Rochester, New York 14604

Lake Clear Girl Scout Council
North Country Girl Scout Council
56 Cornelia Street
Plattsburgh, New York 12901

Wolf Creek Boy Scout Camp
Seneca Council Office
218 North Second Street
Olean, New York 14760

Association Island
Henderson Harbor,
New York 13651

USING THE SENSES TO STUDY THE WORLD OF NATURE

by John Weeks

1. - PHYSICAL SCIENCES - THE NON-LIVING ENVIRONMENT

A. WEATHER

THE HUMAN WEATHER STATION

Wind Direction - face, moistened finger

Wind Speed - Beaufort force scale (visual criteria)

Temperature - Face, outstretched palms (comparison)

Cricket thermometer - add 37 to no. of chirps in 15 sec. for temp.

HOME MADE WEATHER INSTRUMENTS

See attached sheet

B. AIR QUALITY

ESTIMATING AIR QUALITY BY OBSERVATION

Have students observe what happens to smoke or exhaust in different weather

Can you find landmarks which are $\frac{1}{2}$ mile, $\frac{1}{2}$ mile and 1 mile from your school. Check visibility in rain, snow, sleet and fog. How does visibility relate to air pollution?

Sunsets also can reveal something about air contamination.

C. WATER QUALITY

WATER SUPPLY

Tinfoil or house roof - to be explained

Plants cycle water - cover growing plant with jar or plastic cover - moisture collects on cover--What's its source?

POLLUTION OR CONTAMINATION

Visit polluted areas - look for unusual colors - use sniff test - collect samples and allow to settle or evaporate - put drop on white blotter, observe

Collect fresh snow from various places - melt or allow to evaporate or filter

D. SOIL

COMPOSITION OF SOIL - soil has many different textures and ingredients, including broken up rocks and decomposed plant remains.

Examine, feel, smell soil. Put several handfuls in a quart fruit can, fill with water, cap and shake thoroughly. Allow to settle. Layers of clay, silt, sand

and gravel from top to bottom. Clay may require hours to settle.

Can you make soil? Rub soft stones together. Plant seeds in the dust. Mix leaf mold or peat with some, plant seeds and compare.

2. - BIOLOGICAL SCIENCES

The living community presents nearly infinite opportunities for use of the senses in learning. Since almost all textures, colors, shapes and sounds in the living community have function, it is possible to teach many lessons with this exercise of the senses.

A. SOME UNDERLYING PRINCIPLES

1. The world of nature is a living community like the communities of man - role playing, interdependencies

2. The living community operates on energy from the sun

Sunlight is energy, Converted to plant material by photosynthesis, it becomes the fuel of the living community. Plant eaters (some insects, mice, deer) are fed upon by flesh eating creatures (insects, birds, foxes, even man). It takes many pounds of plant eater for every pound of predator.

3. The natural community is dynamic. It is constantly undergoing change. Plants and animals are adapted to the situations in which they are found. and may move with changing conditions

Plant succession, seasonal changes in plants

Seasonal changes in animals

Migration and hibernation

Plumage and pelage changes

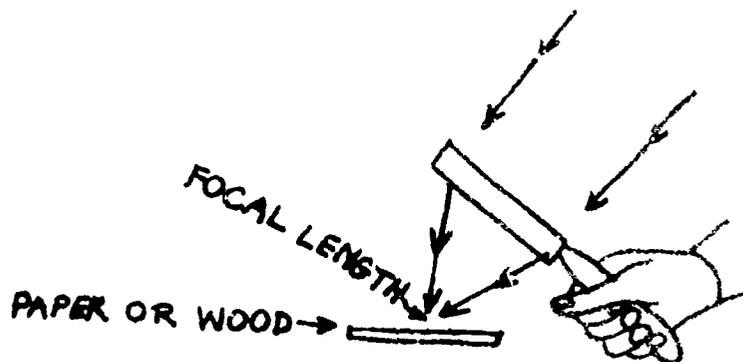
4. Many activities of man upset the natural community by damaging the quality of environment.

Overharvest, destruction of habitat,
environmental contamination.

EXERCISES AND EXPERIMENTS

A. SUNLIGHT IS ENERGY WHICH DOES WORK FOR US

A1 - 1 HAND LENS



PURPOSE - To demonstrate that sun's rays, if concentrated, possess enough energy (heat) to char or burn.

MATERIALS - Any magnifying glass, a piece of paper or light colored wood direct sunlight.

PROCEDURE - Hold lens so that it is between sun and paper. Move the lens toward and away from the paper until the spot of light is smallest. Distance between lens and paper at this point is the focal length of the lens; hold lens in this position until the desired amount of charring occurs.

CAUTION: BOTH PAPER AND WOOD CAN BE IGNITED IN THIS WAY.

VARIATION - Turn paper at different angles from sun and time. Different angles account for differences between tropics and poles. Can you see what happens.

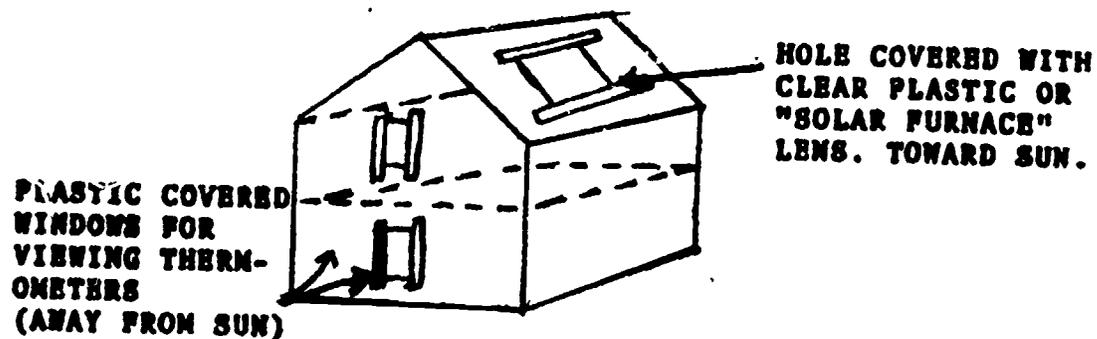
DISCUSSION POSSIBILITIES - Did you already know that the sun produced this much heat? How? What did the lens do? Did the sun actually do any work for us? Can you think of a practical use for this?

A1 - 2 USING THE SUN TO HEAT A HOUSE

PURPOSE - To demonstrate that sun's rays (if we can capture them) possess enough energy to heat things.

MATERIALS - Small pasteboard boxes with flaps, glass or clear plastic for windows, scissors, knife, tape, aluminum foil, black construction paper (amounts of foil, paper and plastic depend upon size of box) 2 household thermometers.

PROCEDURE - Use imagination to construct a house with upstairs and downstairs. Start with a windowless house. Make windows as indicated by experiments.



TYPICAL PASTEBOARD HOUSE

EXPERIMENT 1 - Install windows as shown in diagram. Partition between floors without opening. Set in sun and record temperatures (upstairs and down) every half hour for one day.

VARIATIONS - a. Make hole in partition (floor) about the size of a stairwell. Record temperatures and compare with above. (Air movement)

b. Make a window in the downstairs, , toward the sun.

EXPERIMENT 2 - Make a second house similar as possible to the first. Cover one entire roof (including hole) with aluminum foil, and the other with black construction paper. Set in the sun and compare upstairs temperatures in each. Discuss causes of differences (reflection - absorption).

A1 - 3 BLACK-BOTTLE - WHITE BOTTLE

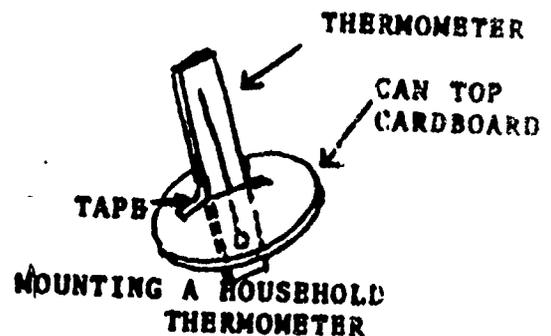
PURPOSE - To demonstrate the capture of sun's energy.

MATERIALS - 2 clear glass jars or bottles, 2 thermometers, construction paper of various colors including black.

PROCEDURE - Cover one bottle with aluminum foil, and one with black construction paper. Mount the thermometers so that the bulb is in the bottle, and the scale from about 70° up is out. Set bottles in the sunlight, and record differences throughout the day. Discuss findings. (Absorption or trapping, reflection)



WRAPPED BOTTLE
WITH STEM THERM.



MOUNTING A HOUSEHOLD
THERMOMETER

VARIATION - Fill bottles with water and repeat experiment. Use different colors of construction paper. What happens when you use a clear bottle without covering it?

A2 - 1 PLANTS NEED LIGHT

PURPOSE: To demonstrate that plants do not grow well in absence of light.

MATERIALS- Package of radish seeds. 2 pots or other soil holders, soil or other growth medium, small sprinkler, squares of colored cellophane

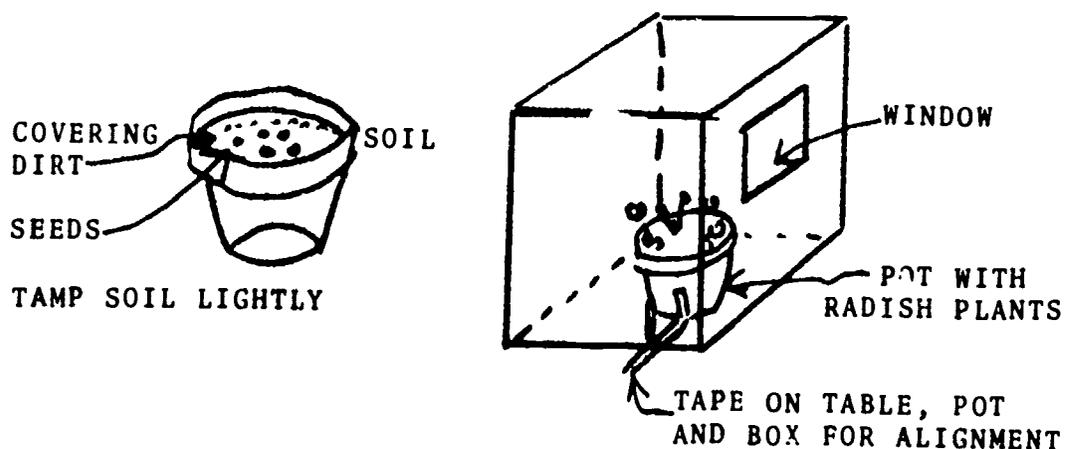
PROCEDURE- Place some soil in pots. Spread an equal number of radish seeds in each pot. Cover with half-inch of soil. Water slightly. Place one pot in closet, drawer, or cover with light tight box. Place second box in well lighted spot. Water both lightly, as needed, to keep soil moist.

Observe and compare daily for about 2 weeks. Discuss results.

VARIATION - Plant several pots of seeds. Cover all but 1 in boxes in which a 2" X 2" window has been placed. Leave one hole uncovered (or cover with clear cellophane). Cover each of other windows with a different colored paper. Observe and compare daily.

CAUTION: CARE MUST BE TAKEN NOT TO ROTATE PLANT POTS OF COVERING BOXES. ALWAYS RETURN TO SAME POSITION.

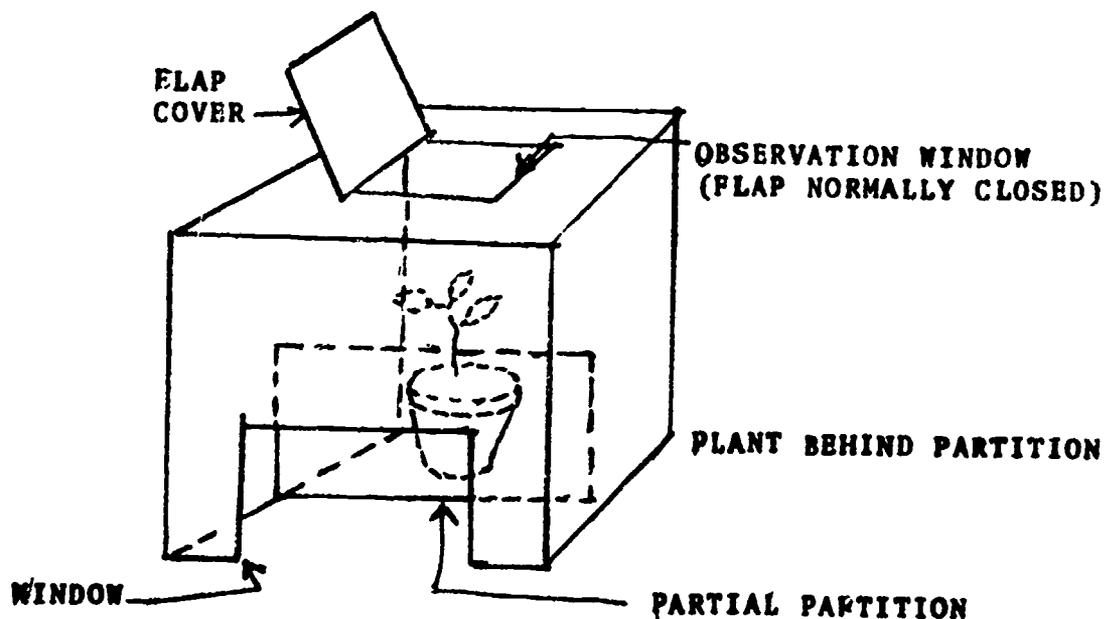
SUGGESTION: MAKE MARKS ON TABLE, POT AND BOX TO INSURE ALIGNMENT.



A2 - 2 GROWING PLANTS SEEK FAVORABLE LIGHT

PURPOSE - To demonstrate that plants can alter their growth to seek favorable light.

MATERIALS - Small potted plant (begonia or geranium), pasteboard box big enough to cover plant and allow for growth, scissors, knife, tape, sprinkler.



PROCEDURE - Remove top flaps from box for partial partition, and observation window cover. Cut a window or notch in the box, so that it faces the partition. The partition should be slightly lower than top of plant. The window should not be taller than the partition. The observation window should be large enough to allow for viewing on both sides of the partition, but should be enough smaller than the flap cover to prevent any light from leaking through.

Invert the box and set it over the plant as shown. Remove the flap and observe once or twice weekly. Water through the flap using a funnel, or get a dish of water under the pot.

DISCUSSION - Migration of growth hormones make this possible. See under auxins in a biology text.

A3 EVERYONE HAS PERSONAL PYRAMIDS

PURPOSE OF EXERCISE - To demonstrate the variety and numbers of things required to support a person, and introduce the idea of pyramids of mass, or numbers.

PROCEDURE - Arrange lists of things in order of numbers or amounts required for a given period of time. Fit them into a pyramid with largest amounts at base, and smallest at top. The students might have to do some research at home to determine numbers. If class is advanced enough, graph paper might be used to plot the relative amounts exactly.

Included should be discussion of reasons for it requiring so much extra for the needs of one person.

Culminate with discussion of food chain, and energy pyramid.

A3-1(1) **CLOTHING** - What is required to keep one person well dressed - with one suit of clothes at all times.
Period - 1 school year.

Shoes, stockings, shirts, trousers, skirts, underwear, coats, jackets, sweaters.

Causes of extra needs - Wear, laundry, weather change loss.

A3-1(2) **FOOD** - What is required to keep one person well fed for a period - 1 month, without weight gain, except that normal for growth. It might be taken from store or market to dinner table.

Meat, salad, potatoes, vegetables, desserts, seasonings, sauces, milk, water, other liquids.

Sources of loss - Energy needs, evaporation, metabolic wastes, non-usable parts of foods, unconsumed food.

A3-1(3) What is required for the completion of one special assignment.

Pencils erasers, sheets of paper, chalk.

(What do we do with time and energy?)

Assign arbitrary values - Hours, salary, equal amount of goods?)

Thomas Rillo....Curriculum Enrichment ... Math

OUTDOOR LESSONS IN MATHEMATICS

by

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TOPIC: OUTDOOR MEASUREMENT

- OBJECTIVES:
1. To develop skills in estimating and measuring distances and areas out-of-doors.
 2. To use various units of measure based upon the parts of the human body and natural objects and compare their relative accuracy.
 3. To determine each pupil's individual length of pace. (Roman Pace)
 4. To demonstrate the need for standard units of measure.

- CONCEPTS: A. Early man used various units of measure based mostly on parts of his body.
1. Arm yard - the distance from the nose to the middle finger on the hand of the outstretched arm.
 2. arm foot - the distance from the biceps to the inwardly curled fingers
 3. finger inch (digit) - the width of a finger or distance of the first joint to the tip of the finger
 4. cubit - the distance from the elbow to the tip of the middle finger of the outstretched hand
 5. span - the distance across the palm from the tip of the little finger to the tip of the thumb of the outstretched hand
 6. shaftment - the distance from the one side of the palm to the outstretched thumb
 7. palm - the distance across the palm at the base of the fingers
 8. pace (Roman) - the distance from the heel of the foot to the heel of the same foot when it hits the ground after two steps (a double step)
 9. inch - the distance of three barley corns from the center of an ear of barley (laid end to end) or the length of the terminal bone of the thumb
 10. rod - the length of the left feet of sixteen men as they left church on Sunday morning or one quarter of a chain (following page) known as a "pole" or "perch".

11. fathom - the distance between the tips of the fingers of two outstretched hands.
 12. chain (surveyor's or Gunter's) - a length of chain made of #6 to #9 wire made up of one hundred links equal to 66 feet.
 13. mile - 1000 Roman paces or 80 chains
 14. acre - 43,560 square feet or ten square chains or approximately 209 feet x 209 feet square
- B. Measurement is a comparison of a distance to a standard unit
- C. It is impossible to measure exactly with the equipment we have.

VOCABULARY: (see Concepts)

Standard unit - a quantity adopted as a rule for measurement (for example, inch, foot, yard.)

Estimate - to judge the value of something

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

Present the following problem: If you were asked the distance between these two trees (point) what would you estimate? (Have each child make a guess to himself) What standard unit of measure did you use? (Yards, feet, inches, etc.) What is a more accurate way of finding the distance? (probable answer: measure with a ruler) What would you use if you had no standard unit to measure with?

After discussing the ways using parts of the human body or natural objects, have the pupils measure the distance using a unit of their own choosing. Have the children report on the distances using their units of measure. (i.e. 75 cubits, 48 arm yards, etc.) Have the children realize the need for a standard unit of measure for telling this distance to others. Have them realize the inaccuracy of the non-standard unit of measure. Have them determine the length of their own pace by walking a pace course of 100 feet distance. Have them walk the distance twice (up and back). The pace course is laid out on sloping ground so the number of paces should be different. Have them realize this inaccuracy. Have the pupils round off to the nearest pace. (Any fraction of a pace - $\frac{1}{2}$ or above - should be rounded off to the next higher numbered pace.) Have all the children pace off the distance and report

the number of paces. (This should reinforce the understanding of the need for a standard unit of measure.) Have them average the two numbers (paces up and back), round off to the nearest whole number and divide this number into 100 to get in their length of pace. Have them figure out the paced distance in feet by multiplying the length of their pace by the number of paces taken and report their answers.

See if they realize that rounding off causes variations in the pupils' answers.

Have children estimate distances with a method used by "fenceviewers" in the early days. By knowing how far apart the posts in a fence are, the distance can be found by multiplying this distance times the number of posts in a given distance. Have the children estimate the size of an acre. Have them form a square acre (approximately 209 feet x 209 feet) by standing in a line, etc.

Have them pace off 209 feet. See if they can form a rectangular acre. An acre is 43,560 square feet, therefore by knowing one side, the other may be found by dividing the known side into 43,560.

Have the children divide into two groups and practice using the chain tape. (Care should be taken so that the children don't kink and break the chain.)

Have them measure distances with the chain. An acre is 10 square chains. Have the two groups measure off an acre.

References:

Wasson, Foster E. and Preckner, Leo J.
Elementary Principles in Elementary School Mathematics.
New York: Holt, Rinehart, and Winston, 1964. Pp.X+468.

By Charles E. Activities for Teaching Forest
Observation. Forest Service, U. S. Department of
Agriculture, Milwaukee, Wisconsin, January, 1958.
Pp. 32.

TOPIC: SLOPE MEASUREMENT (Three Methods)

OBJECTIVES: 1. To determine the slope of the land.

CONCEPTS: 1. One way of expressing the slope of the land is in percentage.
2. To determine the percentage of slope, calculate the rise distance divided by the run distance and multiply times 100.
3. The percentage of slope expresses the change in elevation in feet for each 100 feet of horizontal distance.

VOCABULARY: slope - is the inclination of a plane
rise - the vertical distance between two points.
run - the horizontal distance between two points.

MATERIALS: Method #1 -- 50 inch string, line level, yardstick
Method #2 -- sighting level, yardstick
Method #3 -- yardsticks, carpenter's level

INSTRUCTIONAL PROCEDURES AND ACTIVITIES:

Method #1: Choose a slope to be measured. Place the attached nail into the ground so that the string is at ground level. Stretch the string in the direction of the down-slope. Place the line level on the string and level it. Stand the yardstick in a vertical position at the free end of the string and determine the point at which the string touches the yardstick. Since length of the string is 50", the run is equal to 50". The rise is equal to the yardstick measurement. A rapid method to calculate slope is to multiply the rise by two to obtain the per cent.

Method #2: Stand erect with the sighting level in hand, Sight a distance, point when the instrument is leveled. Measure the distance to the point. (The horizontal measurement to this point is not necessary for this method) Measure the distance of your eye above the ground in inches. Apply the information obtained to the formula for percentage of slope:

$$\% \text{ of slope} = \frac{\text{eye-height (Inches)} \times 100}{12 \text{ Distance to the sighted point (in feet)}}$$

Method #3: Make a mark on one yardstick at the 33 1/3 inch point. Place this stick horizontally with the zero end touching the slope. Place the level on the stick and move the free end up or down until it is level. With the other stick, measure the distance to the ground from the horizontal stick at 33 1/3 inch mark. The number of inches, multiplied by 3, gives the percentage of slope.

REFERENCES:

Foster, Albert B. and Fox, Adrian C. Teaching Soil and Water Conservation: A Classroom and Field Guide. Soil Conservation Service, U. S. Department of Agriculture, Washington, D. C., 1964. Pp. 30.

Cornell Rural School Leaflet. Conservation: A Handbook for Teachers, Vol. 45, No. 1 (September 1951)

Shuster, Carl N. and Bedford, Fred L. Field Work in Mathematics. New York: American Book Company, 1935.

TOPIC: METER STICKS AND LEVEL (Surface Profile Map)

OBJECTIVES: 1. To make a map of the surface profile of an area.

CONCEPTS: 1. The surface of the land changes over a period of time.
2. The surface profile can be mapped to show the extent of change over a period of time.

VOCABULARY: Profile - a drawing showing a vertical section of the ground.

MATERIALS: 3 meter sticks, small spirit level, magnetic compass, graph paper, pencil, wooden stakes.

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

1. Choose an area which shows some changes in elevation.
2. Drive a stake in the ground to mark the starting position. With the compass, sight a direction along the desired path to be mapped. Drive another stake in the ground along this line at a distance.
3. Place a meter stick in a vertical position at the starting position with the zero end touching the ground. Attach two meter sticks together, end to end, and place one end on the ground on the up-slope side and the other end touching the vertical stick. This double meter stick should be placed along the original compass direction. Level the double stick with a spirit level. Record the vertical distance on a piece of paper. Also record the horizontal distance, which in this case, is two meters in length. On steep slopes the procedure may be reversed: i. e. the horizontal stick may be one meter in length and the vertical stick may be two meters in length. Proceed up the slope in a similar manner in line with the two stakes. Transfer the vertical and horizontal distances to a piece of graph paper to make a surface profile map.

REFERENCES:

Phillips, Edwin A. A Laboratory Block: Field Ecology.
Boston: D. C. Heath and Co., 1965. Pp. xii + 100.

SIGHTING LEVEL (spirit level type and plumb bob type)

- OBJECTIVES:**
1. To use a sighting level to determine contours on a slope.
 2. To use a sighting level to determine if the ground is level.

- CONCEPTS:**
1. A sighting level is an instrument used to determine a horizontal line of view.
 2. A contour line is an imaginary line on the earth's surface which connects all points of the same elevation. Contour lines are drawn on maps to show elevation.
 3. A contour interval is the vertical distance between two contour lines.

VOCABULARY: sighting level, contour line, contour interval (see above)
stadia rod - a stick which is graduated at one foot intervals with red and white paint.
topographic map - a map which shows elevation by means of contour lines.

MATERIALS: sighting level, stadia rod, wooden stakes, stick--cut to desired height, topographic map.

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

Illustrate contour lines on a topographic map. To mark off contours on a slope that is located at an elevation higher than your position, sight the slope with the sighting level. Direct an assistant to walk up the slope until you can see his shoes through the instrument, when it is leveled. The position of his feet is exactly the height of your eye level above the ground. If your eye height is four feet-five inches then the vertical distance is equal to four feet-five inches. This distance is known as the contour interval. Direct your assistant to put a stake in the ground at that point. By directing your assistant to his right or left and repeating the procedure, you can determine the position of a contour line along the slope. To establish a contour interval that is an even number of feet, obtain a stick that allows the sighting level to rest at the desired height above the ground.

When marking off a contour that is located at a lower elevation than your position, use a stadia rod. Direct your assistant to move down the slope with the rod until you can sight a mark on the rod which will indicate the desired contour interval. For example, if you are sighting from a distance four feet above the ground, you must sight the eight foot mark on the stadia rod in order to establish a four foot vertical difference. Direct your assistant to put a stake at that position and move to his left or right to establish the position of another stake along the same elevation.

To determine if the ground is level, direct your assistant to take the stadia rod to a position in front of you. If you are sighting from a position four feet above the ground, your assistant is standing at the same elevation if you can sight the four foot mark on the stadia rod when the instrument is leveled.

REFERENCES:

Magnus, Marlyn. "How To Read a Topographic Map", Nature and Science, Vol. 1, No. 2, (August 1964), Pp.10-11.

Swift Instrument, Inc. Sighting Level (instruction sheet), Boston 25, Massachusetts. Pp.4.

Shuster, Carl N. and Bedford, Fred L. Field Work in Mathematics. New York: American Book Company, 1935.

Kiely, Edmond. Surveying Instruments: Their History and Classroom Use. New York: Bureau of Publications, 1947.

New York State Colleges of Agriculture and Home Economics at Cornell University. Contour Lines, Leaflet 6, (June 1954)

Cornell Rural School Leaflet, Conservation: A Handbook for Teachers, Vol. 45, No. 1 (September 1951) Pp 63.

Knapp, Clifford E. "How to Make a Sighting Level" Third Minnesota Outdoor Education Workshop Report, (October, 1964) Pp. 41-42.

TOPIC: HYPSONETERS (yardstick, isosceles right triangle, and card board instrument)

OBJECTIVES: 1. To determine the heights of objects with a hypsonometer.

CONCEPTS: 1. The hypsonometer is any of the various instruments used in determining the heights of objects.
2. An isosceles right triangle is one in which the two sides (legs) adjacent to the right angle are of the same length.

MATERIALS: Variety of hypsonometers

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

Isosceles Right Triangle Method:

1. Stand a distance from the object to be measured.
2. Hold the triangle to the eye so that the top of the object can be sighted along the hypotenuse. The horizontal leg of the triangle must be held parallel to the ground. Move forward or backward until the top of the object can be sighted.
3. The height of the object may be determined by measuring the horizontal distance from the object at the position of correct sighting and adding the height that the triangle is held above the ground.

Yardstick Method:

1. Stand at a distance of 66 feet from the object to be measured.
2. Hold a yardstick which has been marked off and numbered every 6.15 inches in a vertical position at a distance of 25 inches from the eye. Slide the stick up or down until the top of the stick is in line with the top of the object. Without moving the head or the stick, sight to the bottom of the object. The position at which the line of sight crosses the stick marks the number of 16 foot lengths of the object. Multiply this number by 16 feet to obtain the height.

Cardboard Instrument Method:

1. Sight the top of the object through the screw eyes.
2. The string will hang vertically or plumb. Determine the number which the string crosses when the top of

the object is sighted. Measure your distance from the object at this point. Multiply this distance by the number on the scale and divide the product by 10. To this answer, add the height that the instrument is held above the ground. This answer is the height of the object.

REFERENCES:

Shuster, Carl and Bedford, Fred L. Field Work in Mathematics. New York: American Book Company, 1935.

Fox, Charles E. Activities For Teaching Forest Conservation. Forest Service, U. S. Department of Agriculture, Milwaukee, Wis: onsin, January, 1958. Pp. 32.

Forest Service. U. S. Department of Agriculture. Forestry Activities: A Guide For Youth Group Leaders, Washington, D. C., 1961. Pp. 31.

TOPIC: CLINOMETER (Protractor and Slopeboard types)

- OBJECTIVES:**
1. To use a clinometer in measuring angles of elevation and depression.
 2. To determine heights of objects, and the slope of the land.

- KNOWLEDGE:**
1. A Clinometer is an instrument used to measure angles of elevation and depression.
 2. The slope of the land may be measured in degrees, per cent, and as a ratio.

- VOYABULARY:**
- Clinometer (see above)
 - angle of elevation - the angle at which a slope rises from the horizontal
 - angle of depression - the angle at which a slope falls from the horizontal
 - triangulation - an operation for finding a position by means of bearings from two fixed points a known distance apart.
 - slope - the incline of a plane

MATERIALS: Clinometer, graph paper, pencil, protractor, yardstick

CONSTRUCTIONAL PROCEDURE AND ACTIVITIES:

Demonstrate how to use the clinometer in finding angles of elevation and depression by sighting up a slope and down a slope. Have the students find various slopes using the clinometer. Demonstrate how to use the clinometer in sighting the top of a tree or tall object. Record this angle in degrees. Measure the student's eye height above the ground. Record this number. Measure the distance that the observer stands from the object, when the sighting is made. With graph paper establish a scale which will enable the horizontal distance to be graphed. With a protractor measure the angle on the graph paper that was found with the clinometer. Complete the triangle on the paper and count the number of squares in the vertical distance. Add the eye height to this vertical distance to find out the height of the object. This method of finding the height of an object is known as triangulation. Using a slope board constructed to read in per cent and degrees, figure a way to convert per cent of slope to degrees of slope. (Multiply the percentage figure by .573)

REFERENCES:

Rockcastle, Verne N. "Science Experiments in the Classroom", Cornell Science Leaflet, Vol. 55, No. 3 (April 1952), Pp 32.

Shuster, Carl N. and Bedford, Fred L. Field Work in Mathematics. New York: American Book Company, 1935.

Greenhood, David. Down to Earth: Mapping for Everybody. New York: Holiday House, 1951.

TOPIC: ANGLE MIRROR and 3-4-5 TRIANGLE ROPE

OBJECTIVES: 1. To mark off a right angle on the ground by two methods.

CONCEPTS: 1. The two mirrors of the angle mirror form an angle of 45 degrees.
2. When the angle mirror is used properly, an angle of 90 degrees can be constructed.
3. A triangle with one leg of three units in length, one other leg of four units in length, and the hypotenuse of five units in length, forms a right triangle.

VOCABULARY: angle mirror - a modern instrument used for determining and constructing right angles.
right angle - the intersection of two lines or planes at an angle of 90 degrees.

MATERIALS: angle mirror, rope 12 feet (or other units) long, stadia rods or poles

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

Angle Mirror

1. Hold the angle mirror vertically and sight across the front edge of the mirror closest to the eye.
2. Direct an assistant to place a pole in the ground so that it is reflected in the mirror which faces the eye.
3. Direct an assistant to take another pole and walk until you can see this pole above the mirror which faces the eye.
4. Line up this pole with the image in the mirror and the poles will be 90 degrees apart. Two lines drawn from the angle mirror to each pole will form an angle of 90 degrees.

3-4-5 Triangle

1. Place the 3 foot (unit) mark on the rope at the point at which a right angle is to be constructed.
2. Hold the rope at this point and bring the two ends together. Stretch the rope tightly to form a right triangle.

REFERENCES:

Shuster, Carl and Bedford, Fred L. Field Work in Mathematics. New York: American Book Company, 1935.

Kiely, Edmond. Surveying Instruments: Their History and Classroom Use. New York: Bureau of Publications, 1947.

TOPIC: Groma and Surveyor's Cross

OBJECTIVES: To mark off two lines on the ground that are at right angles to each other.

CONCEPTS: 1. The groma was used by the Romans to lay out right angles.
2. The surveyor's cross was developed after the groma and was used about the time of the Renaissance to lay out right angles.

VOCABULARY: 1. groma--an instrument used by the Romans to lay out right angles.
2. right angle--an angle of 90 degrees.
3. plumb line--a line that hangs vertically toward the center of gravity of the earth.

MATERIALS: Groma, stakes, surveyor's cross.

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

1. Set the groma on the ground vertically with the aid of the center plumb line.
2. Sight along three of the lines and have an assistant place a stake in the ground at a point in line with the three lines.
3. Without moving the groma, sight along the two other lines and have an assistant place a stake in the ground at a point that is in direct line.
4. The angle formed by the two stakes and the groma is a right angle.
5. Set up the surveyor's cross and take similar sightings along the grooves cut at right angles in the wooden block.

References:

Kiely, Edmond. Surveying Instruments: Their History and Classroom Use. New York: Bureau of Publications, 1947.

Shuster, Carl, N. and Bedford, Fred L. Field Work in Mathematics. New York: American Book Company, 1935.

TOPIC: SUNDIAL

OBJECTIVES: 1. To use a sundial to tell the time of day.

- CONCEPTS:
1. A sundial is an instrument used to tell the time of day when the sun is shining.
 2. The exact time at a place according to the position of the sun is called sun time.
 3. Standard time zones are imaginary divisions on the earth that are about 15 degrees apart. There are four standard time zones in the United States.
 4. Standard time is the time within a standard time zone.
 5. Daylight saving time is the time in a zone which is one hour ahead of standard time.
 6. A gnomon casts a shadow on the dial.
 7. The angle of the gnomon should be the same as the latitude of the place in which the sundial is used.
 8. There are four standard meridians in the United States which are located near the center of the time zones. They are located at 75° (Eastern) 90° (Central) 105° (Mountain) and 120° (Pacific).
 9. If a place is located to the east or west of these standard meridians, calculations are necessary to determine the correct time with the sundial.

- VOCABULARY:
1. sundial, standard time, daylight saving time, gnomon, sun time (see above)
 2. meridian--a great circle on the surface of the earth passing through the poles and any given place.
 3. lines of longitude--lines on a map corresponding with meridians which measure the distance east or west of the 0 meridian or prime meridian.
 4. lines of latitude--lines on a map which measure the distance north or south of the equator

MATERIALS: Sundial, pencil, paper, magnetic compass

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

1. Find south with a compass
2. Place the sundial on a flat surface with the correct end facing south.
3. The point at which the shadow of the gnomon crosses the dial will indicate the correct sun time.
4. To determine the correct time according to a watch, proceed as follows:

Determine the longitude to the nearest degree for the location. Find the difference between this figure and the standard meridian for your time zone. Multiply this difference by four minutes and subtract the answer from your sundial reading if the location is east of the standard meridian. Add if the location is west of the standard meridian.

REFERENCES:

Editor. "How To Make and Use a Sundial," Nature and Science, (October 19, 1964), p.15.

Editor. "Telling Time By The Sun," Nature and Science, (October 19, 1964), p. 14.

Editor. "How To Make Your Sundial," You and Time: The Fascinating Story of Timekeeping. Bulova Time Center of the Bulova Watch Company, Inc., (dittoed), p. 2.

TOPIC: KNOTTED STRING

OBJECTIVES: To develop skills in examining a stump and reading its "story" (How cut? Animal and plant clues? Age? Good and poor growing years?)
To compare the growth rate of a tree to children.
To develop measurement skills with a knotted string.
To make a tracing of the growth rings on paper.

CONCEPTS: 1. Many things happen to a stump.
2. A new ring is added each year a tree grows.
3. Growth rings tell about good and bad growing years.
4. If we count the rings we can tell how old the tree was when it was cut.
5. Trees grow differently than people.
6. Some plants and animals live on a stump.

VOCABULARY: Growth ring - the amount of new wood that grows each year
stump - the bottom of the tree that is left after cutting

MATERIALS: pencils, paper, knotted strings, hand lens

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

Find a stump and discuss what has happened to it.
Have children read the stump story.
Have children make a tracing to show growth rings.
Find out how old it is.
Have the children find the distance around with a knotted string. (Each child should measure)
Compare the tree growth and growth of people.

TOPIC: WIND SPEED AND DIRECTION MEASUREMENT

OBJECTIVES: To determine the wind speed and direction in different places.
To discover ways to determine wind directions and compare wind speeds.

- CONCEPTS:
1. Buildings, trees, and other objects change wind speed and direction.
 2. Wind can blow in different directions in different places.
 3. Wind can blow at different speeds in different places.
 4. Wind is moving air.

VOCABULARY: Wind - moving air
air - the gas which we breathe

MATERIALS: paper, clipboards, magic marker, wind measurers, balloons

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

Have children observe objects that are moved by the wind (clouds, branches, dust, etc.)
Determine wind directions by these observations.
(Directions in relation to buildings - Draw map with arrows)
Children use wind measurers in different places - record results.
Release balloons to observe their movements in the wind.

REFERENCES:

Cornell Rural School Leaflet. Conservation: A Handbook for Teachers, Vol. 45, No. 1 (September 1951)

TOPIC: SOIL COMPACTION GAUGE AND WATER ABSORPTION RATE

- OBJECTIVES:
1. To determine relative differences in the amount of soil compaction in different areas.
 2. To make hypotheses about the causes of compaction, and the relationships of compaction to plant growth, soil type, and water absorption.
 3. To estimate the soil compaction number in different locations.

- CONCEPTS:
1. The compaction of the soil differs in various places due to various factors.
 2. Some of the factors which affect soil compaction are soil type, use of the area by man and other animals, plant cover, and exposure to weathering and erosion.
 3. The water absorption rate in soil is affected by the compaction.

- VOCABULARY:
1. Soil Compaction Gauge - an instrument to measure the relative soil compaction.
 2. Water absorption rate - the amount of water that is absorbed into the soil in a specified time.

MATERIALS: soil compaction gauge, #5 juice can, pencil, paper, 12 inch plastic ruler, container (quart) of water

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

1. Find an area of soil to test for compaction and water absorption rate.
2. Press the gauge into the soil until the dowel goes one inch into the soil. Immediately take a reading at the top edge of the spool. This is the soil compaction number for that location.
3. Take a #5 juice can and remove both ends. Force it into the soil about one or two inches. (This is facilitated by hammering on a board placed over the can.)
4. Quickly pour one quart of water into the can and keep a record of the passing seconds.
5. With a 12 inch plastic ruler, keep a record of the height of the water in the can at chosen intervals.
6. Repeat the process in other locations and compare the results. Estimate the compaction and absorption

rate before testing.

7. Record important information about the soil, plant cover, evidence of erosion, and other factors which may affect soil compaction and absorption rate.

REFERENCES:

Knapp, Clifford E. "How Hard Is the Soil?" Nature and Science, Vol. 3, No. 1 (September 20, 1965). p. 7.

Cornell Rural School Leaflet. Conservation: A Handbook for Teachers, Vol. 45, No. 1 (September 1951)

Foster, Albert B. and Fox, Adrian C. Teaching Soil and Water Conservation: A Classroom and Field Guide. Soil Conservation Service, U. S. Department of Agriculture, Washington, D. C., 1964. Pp. 30.



TOPIC: SECCHI DISK

- OBJECTIVES:**
1. To determine the limits of visibility in bodies of water.
 2. To compare the limits of visibility in different bodies of water and in different locations in the same body of water.
 3. To calculate the average of two measurements in determining the limit of visibility.
 4. To measure a distance of one meter from eye to the surface of the water.
 5. To hypothesize the affect of the limit of visibility upon plant and animal life in the water.

- CONCEPTS:**
1. A secchi disk is an instrument to determine the limit of visibility in a body of water.
 2. There are many factors which affect the accuracy of the reading. Among these are: the person observing, time of day, condition of the water surface, sky conditions, and the particular location of measurement.
 3. The amount of visibility in a body of water has an affect upon the type and quantity of plant and animal life found there.
 4. Water that is cloudy or discolored is called turbid.

- VOCABULARY:**
1. Limit of visibility - the greatest distance at which the secchi disk may be seen in the water under standard conditions.
 2. Standard conditions - certain requirements in using a secchi disk that will allow measurements to be compared accurately.
 3. turbid - (see above)

MATERIALS: secchi disk, meter stick, notebook and pencil,

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

1. Demonstrate the proper use of the secchi disk. Compare the testing conditions to the following standard conditions: a. clear sky, b. sun directly overhead, c. shaded area, d. minimum of ripples, and the observer's eye should be one meter from the surface of the water.

2. Shade the area with an umbrella or choose the shaded side of the boat or dock.
3. Lower the disk into the water on a string which is knotted at intervals or graduated in some manner. Lower it until it disappears. Record this measurement. Raise the disk until it appears again. Record this measurement. Take an average of the two numbers. This average is the limit of visibility number.
4. Whenever a reading is taken, record the name of the observer, time of day, condition of the water surface, sky condition, and the measurement location.
5. Estimate the age of the body of water if the pond is man-made. Note the condition of the soil around the water. Observe the plant and animal life.
6. Move to another body of water. Have the group estimate the limit of visibility. Is it more or less than the previous measurement? Have different groups determine the limit of visibility in different places in the body of water. Make hypotheses about the differences found in various locations.

REFERENCE:

Welch, Paul S. Limnological Methods. Philadelphia, Pa.: The Blakiston Co., 1948, Pp. 381.

TOPIC: PLANE TABLE

- OBJECTIVES:**
1. To establish the location of a distant point on a map by the method of intersection.
 2. To establish your position on a map by the method of resection.
 3. To establish the location of a point on a map by the method of radiation.
 4. To establish a map of an area by the method of a traverse.
 5. To establish points on a map by the method of triangulation.

- CONCEPTS:**
1. The plane table is a useful instrument for mapping an area.
 2. The methods of intersection, resection, radiation, traverse, and triangulation may be used in mapping an area.

- VOCABULARY:**
1. intersection--a method of mapping in which a distant object is located on a map by the intersection of two lines extended from each end of a base line.
 2. base line--a line on a map of known length used to establish the position of other points.
 3. resection--a method of mapping in which your position is established on a map by means of sighting two distant points.
 4. radiation--a method of mapping in which radiating lines are sighted to distant points from one position. The distant points are plotted on the map by means of pacing or measuring by other methods.
 5. traverse--a succession of straight lines connecting a succession of established points along a route of survey. If the lines form a closed figure, it is called a closed traverse.
 6. triangulation--a method of mapping in which two or more triangles are plotted along the base line.
 7. plane table--a drawing board mounted on a tripod.
 8. alidade--a device used for sighting distant points and plotting their positions on a map. (a sight rule)

7. This pace rule may be used to map an area with the use of a plane table.

REFERENCES:

Greenhood, David. Down to Earth: Mapping for Everybody. New York: Holiday House, 1951. Pp. 262.

Kjellstrom, Bjorn. Be Expert With Map and Compass: The "Orienteering" Handbook. New York: American Orienteering Service, 1955. Pp. 136.

Mustard, C. A. By Map and Compass: An Introduction To Orienteering. Toronto: The Macmillan Company of Canada, Ltd., 1950. Pp. 64

Personal experience at Camp Bernie in the Ridgewood, New Jersey Outdoor Education Program for eighth grade.

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 7. plane table--a drawing board mounted on a tripod.
 8. alidade--a device used for sighting distant points and plotting their positions on a map. (a sight rule)

9. back sighting--a technique in mapping in which the mapper sights along a line to a previous mapping position to check for accuracy in establishing a new position.
10. magnetic north--the direction to which the north seeking arrow on a compass points.

MATERIALS: Plane table with magnetic compass, spirit level, alidade, hard pencil, eraser, pocket knife, sandpaper, paper, straight pin.

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

1. Setting up the plane table: Choose a suitable position depending upon the method to be used in mapping. Set the plane table at about waist height. With the level, establish a level position (If a marble will not roll off, the plane table is level enough.) Orient the plane table over the sighting position. Set the position of the plane table according to a compass direction. Secure a piece of paper on the plane table with masking tape. Mark the magnetic north arrow on the paper.
2. Intersection Method: This method is used for plotting a distant point on a map. Establish a base line, AB, along a fairly level area. This base line should be about 100 feet or more and drawn to a chosen scale. At starting position, A, sight along the alidade toward the distant object. Sighting should be done with both eyes open. Connect position A with the distant object with a light line drawn along the edge of the alidade. Move the plane table to position B at the other end of the base line. Orient the plane table in the same manner as before by taking a back sighting along line AB. Sight along the alidade to the same distant object from position B. Connect position B with the distant object with a light line drawn along the edge of the alidade. The point on the map, at which the two lines cross, marks the location of the distant object on the map.
3. Resection Method: This method is used to locate your position on a map by sighting two distant objects from the same position. Resection is intersecting two lines on yourself to mark your position on a map.
4. Radiation Method: This method is used when map-

- ping a relatively small area such as a baseball field or smaller. The mapper places himself in a position near the center of the area to be mapped. He must be in a position where he can see the points to be mapped. Sightings are taken to distant objects and light lines are drawn from the mappers position marked on the map with a pin. The alidade is rotated around the pin as each radiating line is drawn. The distance is measured to each distant object by means of pacing or other measurement.
5. Closed Traverse Method: This method is used when the mapper desires to map the boundaries of an area. The mapper starts at a position A and places a dot on the paper at that point. He then sights along the alidade to an object at position B on the boundary and draws the line connecting the two points. The distance between the two points is measured and drawn to the chosen scale. He then moves to position B, and back sights to orient the plane table. From B, another sighting is taken to an object on the boundary of the area to be mapped. The line is drawn to scale to this position marked C. This procedure is followed until the mapper is able to sight the starting position at A. The map is called a closed traverse when the figure is a polygon.
 6. Triangulation method: This method is the same as the intersection method except that two or more triangles are formed from each position on the base line.

REFERENCES:

- Greenhood, David. Down to Earth: Mapping for Everybody. New York: Holiday House, 1951.
- Davis, Raymond E. Surveying: Theory and Practice. New York: McGraw-Hill Co, 1953.
- Forbes, Reginald. Forestry Handbook. New York: Ronald Press Co, 1961.
- Hillcourt, William. Map it Yourself. Reprint.
- Kiely, Edmond. Surveying Instruments: Their History and Classroom Use. New York: Bureau of Publications, 1947.

Phillips, Edwin. A Laboratory Block: Field Ecology.
Boston: D.C. Heath and Company, 1965.

Shuster, Carl N. and Bedford, Fred L. Field Work in
Mathematics. New York: American Book Company, 1935.

State of Illinois, The Office of the Superintendent of
Public Instruction. Handbook for Elementary Science
Workshops.

TOPIC: SIMPLE TRANSIT (two types)

OBJECTIVES: 1. To use the simple transit to make a map of an area.

CONCEPTS: 1. A circle contains 360 degrees.
2. A simple transit is an instrument which determines horizontal angles.
3. By using a protractor to measure angles, a map can be drawn.
4. A modification of this instrument is used by foresters to locate the position of a forest fire.

VOCABULARY: 1. Protractor -- an instrument that is used for measuring and drawing angles.
2. Degree -- a 360th part of the circumference distance around a circle.
3. Angle --- the figure formed by two lines extended from the same point and two planes extended from the same line.

MATERIALS: simple transit, protractor, paper, pencil, measuring device such as a tape measure, magnetic compass.

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

1. Demonstrate how to sight along the pointer to determine an angle between two objects. Place the transit near the center of the area to be mapped. Orient the transit so that the zero mark points to magnetic north. Indicate the location of the transit by a dot on a piece of paper. Indicate the direction of North on the paper with a short arrow extended from the dot. Sight an object and determine the angle. With a protractor transfer this angle onto the paper. Measure the distance to the object and establish a line to the proper scale. Proceed around the circle in this manner until the significant objects are mapped. To locate the position of a forest fire, take sightings from each end of a base line drawn to scale. The point at which the lines cross locates the fire.

REFERENCES:

Committee on Multi-Sensory Aids of the National Council of Teachers of Mathematics (The). Multi-Sensory Aids in the Teaching of Mathematics. New York: Bureau of Publication, Teachers College, Columbia University, 1945. Pp. XV and 455.

Greenhood, David. Down to Earth: Mapping for Everybody. New York: Holiday House, 1951.

Kiely, Edmond R. Surveying Instruments, Their History and Classroom Use. New York: Bureau of Publications, Teachers College, Columbia University, 1947.

Shuster, Carl, and Bedford, Fred L. Field Work in Mathematics. New York: American Book Company, 1935.

TOPIC: COVER FRAME AND PLASTIC OVERLAY

- OBJECTIVES:**
1. To determine the percentage of cover of particular plants in a measured area.
 2. To make plant observations which will lead to ecological concepts.

- CONCEPTS:**
1. The metric system is often used in ecological studies.
 2. Plants occupy different amounts of space in a plant community.
 3. Plant cover is a term used to indicate the space occupied by a plant species.
 4. A 50 x 50 centimeter frame may be used to determine the percentage of cover of herbs and grasses.
 5. A 10 x 10 centimeter plastic overlay may be used to determine the percentage of cover of mosses, liverworts, and lichens.

VOCABULARY: metric system - a decimal system of weights and measures based on the kilogram and on the meter.
plant community - a group of plants found living naturally in the same general location.
mosses, liverworts, and lichens - lower plants found growing on or near the ground level
plant cover (see above)

MATERIALS: 50 cm x 50 cm. cover frame, 10 cm. x 10 cm. plastic overlay, pencil, notebook

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

1. Place the cover frame on the ground in a field.
2. Choose an herb or grass species to study and determine the number of squares covered by that plant species. (Add fractional parts of squares to determine the total number of squares.)
3. Repeat the procedure three more times in a line next to the first plot. Add the total number of squares covered each time.
4. The total number of squares covered is equal to the percentage of a square meter covered, because each square represents one one-hundredth of the total area.
5. For determining the cover of mosses, liverworts, and lichens, use the plastic overlay which is divided into square centimeters.

TOPIC: FIBONACCI NUMBERS

OBJECTIVES: 1. To find evidence of a number series in nature which was invented by a man named Fibonacci.

CONCEPTS: 1. In Fibonacci's number series, each member is the sum of the two members coming just before it. For example: $1 + 1 = 2$, $1 + 2 = 3$, $2 + 3 = 5$, $3 + 5 = 8$, etc.
2. Each number in this series is called a Fibonacci number.
3. Fibonacci numbers can be discovered in some leaf arrangements of plants.
4. The spiral arrangement of plant leaves can be expressed as a fraction.

VOCABULARY: Fibonacci numbers - numbers which are found in a series invented by Fibonacci.

MATERIALS: goldenrod plant, string, pins

INSTRUCTIONAL PROCEDURE AND ACTIVITIES:

Obtain the stem of a goldenrod plant. Starting at the base of the stem, proceed upward and count the leaves around the stem. When you come to the leaf directly above the first one counted, you will have counted a Fibonacci number. This one directly above the first is not to be counted in this series because it is the start of another series. The arrangement of leaves on the stem can be expressed as a fraction. The numerator is the number of turns around the stem, following consecutive leaves, necessary to arrive at a leaf directly above the first. The denominator indicates the number of leaves passed. Remember, do not count the final leaf because it is the start of another series.

of turns around stem
of leaves passed

By inserting pins at the leaf positions and winding string around the stem, counting is made easier.

REFERENCES:

Allips, Edwin A. A Laboratory Block: Field Ecology.
Boston: D. C. Heath and Co., 1965. Pp. xii + 100.

**SELECTED PROBLEMS TO SOLVE OUTDOORS
IN MATHEMATICS**

1. Estimate the number of trees in an acre, birds in a flock, insects in a group, or blades of grass in a square meter.
2. Compare the efficiency and accuracy in using a yardstick, 100' tape measure, forester's chain (66'), and pace in measuring an acre.
3. Find the distance between two points by indirect measurement.
4. Find the height of an object by indirect measurement.
5. Determine the rate of flow of a stream in different locations.
6. Determine the temperature of the air by the chirps of a cricket.
7. Find the average depth, surface area, and approximate volume of a pond.
8. Determine how much water will be accumulated from a specific amount of rain falling on a roof.
9. Determine the volume of soil washed from a gully.
10. With a compass, walk the perimeter of a triangle and finish at the place that you started. With a compass, walk around an obstacle and continue on the same course.
11. Determine if a grasshopper always jumps at the same angle.
12. Determine the distance of a storm with the aid of lightning and thunder.
13. Given the length of a side of an acre, find the length of the other side and measure it off.
14. Estimate the number of leaves on a tree.
15. Determine the speeds of different insects.

REFERENCES:

Beecher, W. J. "Design in Nature is Mathematical",
Science Notes. Chicago, Illinois: Chicago Academy of
Sciences. n.d.

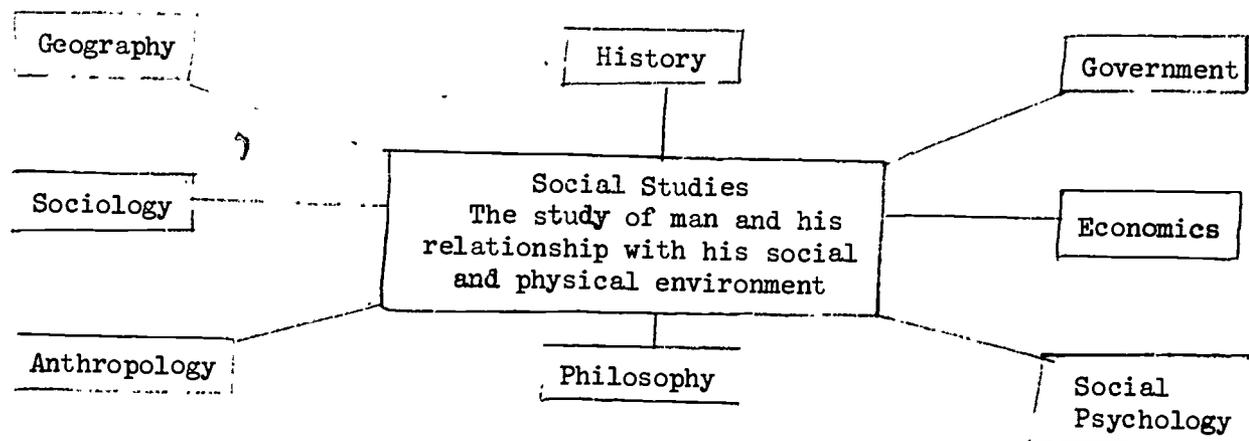
Wagner, Kenneth A. "Moss Mathematics -1," Carolina
Tips, Vol XXVII, No. 9 (November, 1964).

- 16. Measure the temperature and evaporation rate at different locations out-of-doors.
- 17. Find out the amount of water in a cubic foot of snow.

What is Social Studies?

by Ernest Coons

In its very basic form, social studies are the study of man and his relationships with his social and physical environment. Rugg and Kreuger in their text, The Social Studies in the Elementary School, interpret social studies as, "all those activities and materials which are needed for an understanding of modern civilization and their historical development. They form a broad department which is coordinate with the natural and physical sciences, the creative arts and the language arts of reading, literature, writing, etc. Thus the social studies comprise the intellectual care of the entire school curriculum." Social studies in a broad understanding then represents those instructional materials and means which promote human relationships. Areas of geography, history, economics, civics, sociology, anthropology, social psychology, and philosophy are today organized around the social needs and interests of the students. The chart below from Programs in Outdoor Education (Freeberg, Taylor, 1963) also illustrates this concept.



Experiences which the Outdoor Setting Provides in Area of Social Studies

Developing initiative in making choices

Identifying oneself with others

Respecting the rights of others

Sharing materials, tools, and ideas

Solving problems cooperatively

Experiencing success and failure

Respecting group decisions

Sharing responsibilities

Respecting group leadership

Participation in democratic government

Accepting criticism and suggestions graciously

Developing a realization of the individual's relationship to a group

Working with others

Gaining self-reliance, self control and self-respect

Gaining self-confidence through contributions to group

Learning about "web of life," ecological balance principles

Learning about depletion of natural resources

Learning how the government helps develop, control and protect our natural resources

Learning about the agencies which contribute to the wise use of our natural resources

Understanding the effect of natural resources upon population distribution

Understanding the effect of natural resources upon the history of civilization

Search for Indian relics and learning about Indians

Visiting historical sites

Interviewing old settlers

Learning map reading and construction

Suggestions for Social Studies Activities:

Use of compass and related instruments

Map making

Visit of fire towers

Study land formations and drainage

Study top soil and man's influence

Take inventory of natural resources

Judge area as pioneer homesite for basic needs

Dramatizing problems of pioneers

Visit abandoned cemetery

Study tree stump record for historical events

Trace tree from cutting to final product

Name ways environment influences people's lives

Study city or local water resources

Study and visit places of interest in the community

Investigate damage of storms

Cost of litter in your community

Effects of pollution on growing plants

Prepare and use flour from natural grains to complete project

Compare insect activities with man's occupations

Compare man's inventions with nature's devices

Study nature's compasses

Make breads, butter, candles, ice cream, etc primitive ways

Study history of locality and study sites for evidence

Study old house or barn for story of man's tools, construction and basic history

Visit old farm and "recreate" by study and sketches with maps

Keep logs on experience

Establish the means for democratic living in the outdoors

Participate in archeological excavation or restoration

Copy folk festivals and fairs

Trace the manufacture of a product today and compare it with the past

Study geographical features of land areas

Establish bird feeders outside classroom window

Participate in community "good turn" project

and many, many more

Art in Outdoor Education

by Lendall L. Haskell

A sound educational approach to working with children in the natural environment is required in order for several factors of creativity to bloom. It is important that a child uses nature to foster his originality rather than depending upon adults to do this for him. The child's fluency of ideas should flourish as he becomes aware of the found objects available in the environment. He may use materials directly as a part of his creation by redefining its natural purpose. The natural environment might motivate the child to produce a visual response.

The adult responsible for guiding the art should help the child to focus upon that which is around him. Emphasis is made on discovering lines, colors, shapes and textures as they appear in nature. These elements of art when repeated or combined produce the principles of design which exist in nature's great museum. There are many ways to help children focus upon their environment. Inspection of a limited amount of space is of interest. How many different shapes can be found in a square foot of earth? What does an ant look like hiding under the grass when viewed through a reading glass? How many levels can one view in a fourteen inch dried weed? What is the rhythm in the bark of the nearest tree? These discoveries produce the motivation necessary for involvement with art materials.

An honest involvement with materials is the important thing for both the child and his adult leader. There might not be a finished product. That which is happening to the individual as he becomes involved is far more significant. Not being told what he must produce releases the pressure and allows the child to work at his own pace and level of development. Stimulation will aid in breaking the overworked symbols which produces a generalized picture rather than a personal expressive statement.

Bringing the necessary tools and materials to the outdoor environment is a part of a well planned program. The following list is a sound beginning:

1. A hard board the size of a standard paper (12"x18") with large paper clips is a must to work on.
2. Covered containers to hold bulk water and small containers for individual needs are necessary.
3. Paper and cardboard should be varied for different purposes such as thin paper for prints and thick paper for collages.
4. Materials collected requires fast and slow drying glues and cements. Masking tape is very useful.
5. Drawing materials to choose from are basic such as pencils, crayons, chalk, inks, and paints. With these must come the tools to transfer the above materials such as pens and brushes.
6. Cutting tools are very handy such as scissors, utility knives, coping saws, a camper's saw, and carving knives.
7. String, fine, wire, bailing twine, and coat hangers are useful in weaving problems.
8. Brayers and a smooth surface is required for making prints.
9. Plaster of paris, cans, hand drill and bits are necessary for sculptures.
10. Miscellaneous things such as newspapers, staplers, spray shellac, nails, pins, and fixative helps to provide the needed extras.

With these materials, the child can do endless experiences which cater to his needs in the outdoor education experience

EVALUATION OF A RESIDENT CAMP FACILITY FOR EMOTIONALLY HANDICAPPED
PROGRAM

Summary

It was the concensus of the total group after participating in an outdoor education resident center program which provided the dimensions of evaluation of facilities with direct concern as to what modifications would be necessary for emotionally handicapped children. The institute participants totally felt that any typical outdoor education facility which would be safe and viable for any other children's program would be totally acceptable for emotionally handicapped children without any other modifications. The point was clearly made that it was of paramount importance that a resident facility to be used by emotionally handicapped children must be visited and considered in detail by participating teachers and administrators of the emotionally handicapped program in advance of a children's program being conducted on that site. It was also felt that all necessary modifications to meet the needs of the emotionally handicapped would be directly reflected in staffing, program structure, and program implementation rather than through limiting or modification of facilities.

Some Thoughts on Evaluation

by Robert F. Miller

Evaluation is a very common occurrence. The term is quite commonly used to mean, "let's see how much is here," and also to mean "let's see if there is enough." The second meaning will be used here. It is the one that implies comparison of an observed quantity with a stated value.

When you say you will be able to make something better you are implying at least 4 things to the reader; 1. you know and can define to someone else what that thing is, 2. you know and can tell someone how to measure the thing in question, 3. you know and can define to another how much of the thing is desirable, and 4. you know and can show anyone, a way to make it better.

Since evaluation is a required operation, it would be easier if it could be done simply. These paragraphs are to suggest that possibility. All educators use questions to evaluate classroom activities. Why not state the comparisons made so that a reader would be able to replicate the same procedure, if he so desired? What is needed is a definition of what measuring device was used to measure what thing or ability, and what quantity of that thing or ability is considered to be appropriate, so that the comparison may be judged on its own merits.

The word "control" always pops up. It is simply a term to describe a baseline against which a comparison is made. In physics you can take two graduates with equal measures of water, and after heating one of them read the measurement of the graduates again to see (if the temperature is raised enough) that increasing the temperature also increases the volume. The graduate whose temperature was unchanged was the control. In other words, the control was the situation in which no change or intervention was made,

hence the control was not expected to change.

With children, control is not this simple. Two glasses of water may be alike, but two children will not be. What is needed is some method of comparison. This could be a common measure, or a similarity in the conditions of the test, or, to be real fancy, a statistical control. Using a common measure can be as simple as using a teacher made test before and after the session, or as stringent as using a standardized pretest to predict a posttest score and then comparing the observed posttest with the prediction. Either way a child can be compared against himself, i.e., his own gain is the measure found. Control is simply a term for the removal of unwanted things from the comparison you want to make.

This kind of data permits you to calculate the statistical probability that these results could have been due to chance. Should this test of significance show that the chance probability was very low, you will probably infer that you were successful. However, the success really is due to the quality of your data, whether they support your method of intervention or not. Accurate data will provide information to either support a successful approach or to support the elimination of a wasteful approach. Either way, the child is the winner.

The following pages describe; 1. a general system of stating a proposal, and 2. a specific method of subdividing goals into objectives which by their definition suggest tests to be used. It is to be hoped that these 2 pages will be of use to you.

DETERMINE THE PHASE OF YOUR PROPOSAL

PHASE - Borrowed from action research, which deals with the experimental search for the solution to a specified problem -

P . . . roblem: Here you must define your problem, tell what has been going wrong, tell who has been having difficulty.

- H . . . ypothesis: An educated guess. Here you describe what might be, based upon documentation from others with similar situations.
- A . . . ctivities: The more completely you can specify the activities in which you and the children will be engaged, the more readily and accurately your program can be assessed as being applicable.
- T . . . est: What test will show the results of your progress? A solution to a problem was the original argument - How will we know the solution has been effective. No test - No program, No results for the money! No test means we cannot answer George Wald, "But, was it good for children?"

Here is the place for objectives, both institutional and behavioral. These should be worded in such a way as to clearly indicate the state of success. Both the institute and the child should be told what is being expected. If all objectives are stated with active verbs and as things the child will be seen doing, the objectives will be easily measured.

If the proposal states that a specified level of success as shown by a certain test (standardized when possible) will be accepted as an indicator of the project's success, or of the pupil's success, as the case may be, then a criterion level has been set, and others can look at the results and see whether the project was as successful as had been planned.

Here, also, it is advantageous to have some sort of control so that probability statistics can be used to infer that the observed result was not due to chance alone, or to maturation, and that the results can be truly suspected of being derived from the treatment.

- E . . . valuation - After you get results and measurements, what will you do with them? Will you discuss the results to explain the efficiency of the treatment effort or to change to another, based on the results. If changes are made in the operation of the project, will these be discussed in relation to the results.

The evaluation report to the State Education Department is intended for the USOE, so that data can be disseminated to others with similar problems. Since this is the case, it would be very helpful to all if we can and do identify those Educational Treatments that can be used to solve problems.

INSTITUTE EVALUATION

The following represents a summary evaluation resulting from small group participation. The same questions were distributed to each randomly assigned group of institute participants with the results listed below reflecting their observations and evaluations of this institute.

1. WHAT MAJOR ELEMENT WAS MISSED THAT SHOULD HAVE BEEN INCLUDED AS PART OF THE INSTITUTE.

More emphasis on "urban" or city outdoor education.
Specific program development as one aspect of conference.
More time devoted to focus in a particular and specific problems.
Formally organized experience.
Criteria for teaching emotionally disturbed children (specific techniques)
Health and safety.
More working with children in urban area - lack of sidewalk education
Should have characterized the kind of emotionally disturbed child allowed to attend, and yet not go into too much depth.
Also mandate by federal law for monies provided for teacher instruction in outdoor education.

2. DO YOU FEEL THE BASIC ORGANIZATIONAL STRUCTURE OF THIS INSTITUTE WAS EFFECTIVE - HOW AND WHY?

Well organized and effective
Give a general evaluation but give time to give evaluation after returning to home community.
Entire conference should be at Twin Valleys.
Very relaxed.
Status and quality of staff
Size of Group (effectiveness of small group work)
Yes, enthusiastic leadership demonstrated and permeated throughout.
Goals were clear and reinforced.
Warmth and humanism - most apparent.
"Live in" experience allowed for full focus on conference content.
Twin Valleys misfortune should be formally included.
Opportunity between choice of various leaders.

3. WHAT ONE THING COULD HAVE BEEN IMPROVED UPON OR DONE DIFFERENTLY.

Time used in resource session and finance session could have been better used allowing time for "indepth" program development.
Communication regarding voluntary participation (cracker barrel sessions)
Group to all live in one place.
The initial introduction should have provided opportunity for people to get to know one another by providing formally organized interactional experiences.
Possible the groups could have been broken into three.
If we had spent more time at the camp and less traveling we could have all been able to take a part in the sessions.

4. WHAT WAS THE ONE "High Point" FOR YOU RESULTING FROM THIS INSTITUTE?

Infectious nature - enthusiasm and knowledge of "outdoor educators" created excitement.

First actual experience with outdoor education.

Concentric concept of outdoor education

Confirmation of the fact that good teaching can take place outside the classroom and not necessarily from a book.

Informal atmosphere combined with structure

That the conference took place and the concept of outdoor education is viable.

The quality of the presentation and the warmth of the atmosphere.

The spirit of togetherness. Dr. Rillo's speech helped set up the togetherness.

Experience and Dinner at the camp

Exposed to professional and talented staff.

5. OF ALL THE EXPERIENCES SHARED DURING THIS INSTITUTE, WHAT ONE THING DO YOU FEEL WILL BE THE MOST HELP UPON YOUR RETURN TO JOIN HOME COMMUNITY, WHY?

Insight into outdoor education as a natural extension to classroom programming.

Concentric circle concept.

Inner city also to be included in outdoor education.

Transfer of information immediately.

Definitive aspect, outdoor education in its entirety.

State interested enough in developing a total program.

We wish to thank the director for the motivation and sense of direction and commitment to outdoor education.

ADDITIONAL COMMENT

A commitment should be made by each participant to initiate a program in his district and provide feedback to the institute leader within a six month period.

CHECKLIST OF EDUCATIONAL ENVIRONMENTS DESIRABLE ON SCHOOL CONTROLLED PROPERTY

Prepared by Nature Conservancy's National Committee for National Areas for Schools.
Chairman: Dr. John Brainerd, Dept. of Biology, Springfield College, Springfield, Mass.

Schoolboards, architects, landscape architects, superintendents, principals, teachers, and laymen are giving increased attention to diversity of environments on school grounds, for better education. New schools should make greater efforts to save sample habitats. Existing schools can often create diversified environments through careful land-use from the Committee . . . Which of the following does your school have, and which can be provided or added by planning and working with the students?

BARELANDS

- () Paving, as in parking lots or play areas. Useful in studies of microclimates and water runoff, correlated with physical sciences and geography.
- () Planting Soil, as in flower beds and vegetable gardens. Used mostly for annuals.
- () Eroding Soil, as on eroding bank or field corner where children can perennially experiment with digging, grading, mulching, and stabilizing with plants, then laying it bare again. Some erosion is needed on school grounds!

GRASSLANDS

- () Lawn, for soil stabilization and beauty of course. But some should be designated as Experimental Lawn for the children to study. Many schools have a disproportionately large lawn, to the detriment of other possible environments.
- () Turf for Playfields, with grass species best adapted to heavy wear and tear.
- () Rough Grass Areas, with perennial species inexpensively maintained by only occasional mowing with sicklebar or scythe, by controlled burning, or by grazing, or which in certain climates may be stable without any such maintenance.

FORBLANDS Forbs are herbaceous (non-woody) plants other than grasses-like goldenrod. There are too many types to try to characterize, but a school should try to include at least demonstration natural patches of the following:

- () Pioneer Annual Herbs revegetating bare land (to be laid bare again at intervals).
- () Perennial Herbs representing later stages of plant succession on bare land. To the layman, these are often, "unsightly weed patches," but to the scientist and artist, these are treasure houses. Laymen need to be taught about them!

SHRUBLANDS

- () Foundation Plantings, Corner Plantings, Facing Plantings. These go in and out of

style, unfortunately. They are very useful educationally so should not be omitted entirely although some compromise with the architect may be necessary.

- () Hedges and Screen Plantings. Useful for beauty, life sciences, and boundaries TO DELIMIT AREAS OF DIFFERENT LAND USE. Important as windbreaks and dust filters for control of microclimates. (But don't permit tall shrubbery close to automobile roads where it could hide a scampering child from a driver's view.)

TREE LANDS

- () Shade Trees, either planted or native (preferably plenty of both). Of obvious use for beauty, nature, study, effect on microclimates, yet too often destroyed in site preparation because of economic advantage to the contractor, who may genuinely think he is saving the town money by wholesale bulldozing. Favor evergreens on north side of buildings and deciduous trees on the south.
- () Plantations, such as orchards, Christmas trees, trees for posts, trees for lumber and by-products from thinning and pruning (Christmas boughs, firewood, specialty wood for shop to make toys, etc.), arboretum, experimental forest.
- () Native Woods. Samples of various forest types of the region, both managed and preserved as natural areas. These have been widely recognized as educationally important, many schools in certain states having their own school forests for many types of correlation with classroom work. See Nature Conservancy's Information Bulletin 20, THE FOREST IS A CLASSROOM.

WETLANDS

- () Marsh - Herbaceous plants such as cattails, grasses, and rushes emerging from water or a saline flow.
- () Shrubswamp - Low, woody growth in wet soil or water, with some flow of water.
- () Swamp - Forested wetland or shallow-water area, with some flow of water.
- () Bog - Water is stagnant; with herbs, shrubs, and/or trees.

All these wetlands have great educational value. For curricular correlations, examples, and bibliography, see EDUCATIONAL VALUES OF WETLANDS IN MASSACHUSETTS, Fact Sheet No. 5, Massachusetts Wetlands Committee, 20 Spruce Street, Boston 8, Massachusetts.

WATER

- () Lake, Pond or Puddle - Any body of water is useful for teaching physics, biology, chemistry, social sciences, and arts. Both natural bodies and artificial impoundments are highly desirable. Especially save natural ponds! Consult the U.S. Soil Conservation Service for help in constructing school ponds. See SCHOOL PONDS FOR BIOLOGY TEACHING (outdoor Laboratory Series No. 8), American Biology Teacher 21 (5): 163-167, May, 1959.
- () Stream - Any streams, even temporary rills, are valuable teaching aids. (At least

one downspout from the school roof should run on the exterior to be used for study, instead of all being run inside the walls as is now common.) If a playfield must be located where a brook is, don't bury the brook in a culvert but divert it around the field. Keep natural brooks wherever possible - and pan them for educational gold.

ELEVATIONS

- () Slopes - These have educational uses related to esthetics, soil types, microclimates, distribution of plants and animals, and watershed studies. Don't believe that all areas for active play must be level. It is true for most currently popular team sports involving a ball, but don't forget what can be learned from flying a kite, skiing, or playing hillside croquet.
- () Hilltops - A properly maintained view from an eminence, even a low one can give students an improved perspective on their environment, be they studying astronomy, weather, or patterns of human culture. Don't permit the double loss suffered by a school when a hill is bulldozed to destroy a wet land, for instance.
- () Special Plantings. Collection of flowering shrubs: Small - fruit garden: Shrubs used in crafts: Wildlife food patch; Shrubs for experimental pruning, etc. Barbecue area for home economics outside Home Ec. room with Wildlife feeding station for biology students designed by them and art students.
- () Brushlands. Much misunderstood by layman, therefore much needed at schools! Native shrubs may appear above perennial grasses in plant succession, or flourish after cutting of trees, or sprout after fire. Valuable tree seedlings or sprouts may be nurtured by the "messy brush." Many shrubs are themselves valuable. Don't let brushland be needlessly destroyed. If a fire hazard, make a firebreak; if accused of harboring undesirable people, erect a fence to protect valuable shrublands.

SOURCES OF FUNDING FOR

OUTDOOR EDUCATION

by

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New York State Education Department

November 1971

EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

CLEARINGHOUSE ON RURAL EDUCATION AND SMALL SCHOOLS (CRESS)

New Mexico State University

Las Cruces, New Mexico 88001

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OUTDOOR EDUCATION IN THE SCHOOL CURRICULUM

Study of the natural environment through utilization of the outdoors has become an integral and necessary part of the educational curriculum. Studying one's immediate surroundings--the people, places, and things--helps an individual to become more fully acquainted with the concepts, understandings, appreciations, and relationships of man and his environment. One approach to providing such experiences is through outdoor education.

Concerned with direct learning experiences which utilize the natural environment in attempting to achieve educational goals, outdoor education is not a separate discipline but an essential part of the total school curriculum that provides opportunities to enrich the educational process by extending the classroom beyond four walls.

Outdoor education is directly related to the school, community, and life of the child. It involves pupils, teachers, and resource people planning and participating together so that learning is most meaningful in relation to the preparation and follow-up of work done in the classroom.

Teaching in, for, and about the outdoors makes it possible for pupils to understand the world better, to develop an understanding of the interrelationships of man and nature, to gain an appreciation of our social heritage, and to contribute to improved human relationships.

THE SCOPE OF OUTDOOR EDUCATION

Outdoor education may be classified according to three general types of activities: (1) school-site experiences, (2) field trips, and (3) resident experiences. School-site experiences utilize outdoor areas on or adjoining the school grounds. Field trips necessitate leaving the school site and visiting, for example, community facilities. Resident outdoor education involves teachers and pupils living, working, and learning at an outdoor school for a specific number of days.

FINANCING OUTDOOR EDUCATION

Outdoor education attempts to enrich the educational curriculum

and, therefore, should be considered an essential part of the total school program. In general, the financing of outdoor education should be the responsibility of the school district according to the same policies that pertain to other emphases in the curriculum. This is particularly true with respect to field experiences requiring little if any funding other than for transportation. For resident outdoor education programs, the cost of rental or purchase of lands and facilities should be assumed by the school district just as is done with other parts of the school plant. Likewise, transportation, instructional and leadership services, insurance, supplies, and equipment should be provided by the school district just as is done with other aspects of the instructional program.

The cost of food for pupils while living at the outdoor school should be assumed by the family since it has the responsibility for care of its children. However, under no circumstances should a child be excluded from a resident outdoor education experience due to lack of funds. Where such situations exist, social agencies and community service organizations often provide financial assistance.

In some school districts where funds have not been allocated for outdoor education, the program is fully financed by parents or by pupils working on home, school, or community projects. In other situations, program costs are shared between parents and the board of education, with parents usually paying the food cost and the school district assuming all other expenses.

SOURCES OF FUNDING OUTDOOR EDUCATION

Sources of funding for outdoor education usually fall into four general categories: (1) local school tax funds, (2) state funds, (3) Federal funds, and (4) private funds.

Local School Tax Funds

As stated previously, the school district should allocate school tax

funds to cover the cost of providing pupils with outdoor education experiences. Expenditures for such a program should be an integral part of the school district's budget. If budgetary reductions are necessary, all aspects of the school budget should be reduced proportionately rather than certain programs being eliminated.

The education laws of most states allow school districts to conduct programs of outdoor education, particularly with respect to school-site experiences and field trips. A few states--including California, Michigan, New York, Virginia, and Wisconsin--provide specific legislation permitting school districts to lease or purchase camps and to expend tax funds for resident outdoor education programs. In states where enabling legislation is not provided, school districts may still be able to utilize such facilities and expend tax funds for such programs.

State Funds

State financial aid is provided to school districts through state legislation. Some funds are designated for specific educational programs; other funds may be utilized for general purposes, including outdoor education.

Boards of Cooperative Educational Services

One source of state funds for outdoor education is through boards of cooperative educational services. States which have such an arrangement create cooperative boards, usually on the basis of geographic organization, to administer shared services and programs that local school districts cannot provide as economically or as efficiently on their own. Each district which desires certain shared services pays a pro-rated amount of the cooperative board's administrative cost on a per-pupil basis.

Boards of cooperative educational services may serve as the sponsoring agency for outdoor education programs by providing an administrative center and staff working as a service unit to assist

individual school districts not only to become involved in the program but also to operate their outdoor education activities throughout the school year and during the summer.

Many of these cooperative educational service programs, which permit participating school districts to receive reimbursed state aid for monies spent in outdoor education, make possible such aspects of outdoor education as (1) inservice education of teachers, (2) consultant services, (3) field trips, and (4) resident programs.

To determine if your state provides shared services and aid to local school districts through boards of cooperative educational services, contact your state education department. (Addresses of all state education departments are given on pp. 23-26.)

Inservice Education of Teachers

Some states provide financial assistance to local school districts for inservice education of teachers. Individual school districts or a group of school districts in a state may submit an inservice education program proposal for outdoor education to the state education department, which reviews the proposal and considers it for approval. If approved, state funds may be provided to cover all or part of the expenses required to conduct the inservice education program. Inquiries about state inservice funds for outdoor education should be made through the state education department in your state.

Urban Education

State funds have also been allocated to urban school districts to improve the quality of education for inner-city children. Some urban school districts have utilized part of this funding to provide outdoor education experiences, including resident programs. Information on urban funding for outdoor education is available from the education department in your state.

Vocational Education

In most states, funds are provided to local school districts to assist them in implementation of vocational education programs. Vocational education designed to offer students outdoor education experiences, particularly those related to outdoor-type vocations, could be financed through such funds. Specific details on availability of such funds should be obtained from your state education department.

Education of the Handicapped

State financial assistance is available to school districts to provide instructional services for handicapped children. Outdoor education experiences can fulfill many of the needs and interests of handicapped children, and these types of programs have been conducted using such funds. Further information on funding outdoor education programs for handicapped children may be obtained from your state education department.

Federal Funds

Federal financial assistance to education has provided educational institutions with numerous sources of funding, including funds for outdoor education. Some of these sources are discussed below.

Environmental Education Act

This Act and the funds provided by it are directed toward education as a whole. Grants and contracts are available for such environmental education activities as (1) the development of curricula, (2) the dissemination of information, (3) support of environmental education programs at the elementary and secondary levels, (4) preservice and inservice training programs and projects, (5) the planning of outdoor ecological study centers, (6) community education programs, and (7) the preparation and distribution of materials suitable for use by the mass media.

Land and Water Conservation Fund

This fund assists states and their political subdivisions in ensuring that citizens of this and future generations have accessibility to outdoor recreation resources.

To receive grants from the Land and Water Conservation Fund, the state must develop a comprehensive statewide outdoor recreation plan. In addition to serving as a guide for Federal grant assistance, the plan serves, among other purposes, as an opportunity for local units of government and private citizens to take part in their state's outdoor recreation and environmental quality planning programs; the plan also provides a practical tool for coordinating all outdoor recreation and environmental conservation programs.

Grants are made on a 50-50 matching basis, with the Federal share based on allowable project cost. Any state or local unit of government created under authority of state law is eligible for a grant.

Project proposals must be submitted to the Bureau of Outdoor Recreation through a "state liaison officer" designated by the respective state governor. The names and addresses of state liaison officers are available from the U.S. Department of the Interior, Bureau of Outdoor Recreation Regional Offices (see p.28 for a list of regional offices). The bureau's Outdoor Recreational Grants-in-Aid Manual, which contains detailed procedures for the program's administration, is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Land and Water Conservation Fund assistance may also be coordinated with other sources of funding, such as Title III of the Elementary and Secondary Education Act (ESEA). Fund assistance may be granted for the acquisition and development of outdoor recreation areas and facilities which will be utilized primarily by the general public but which also will be available for outdoor education classes. Educational facilities to be used solely by schoolchildren as part of an outdoor education curriculum or to be used as a substitute for

All public and private nonprofit agencies, institutions, and organizations are eligible to apply for grants under this Act. Local education agencies should develop written proposals--including the educational goal, project description, budget information, and evaluation procedures--and submit copies of the proposals to the appropriate state education agency. At the same time, local education agencies should also submit the proposals to the U.S. Office of Education.

For information and a handbook on preparing proposals, contact Environmental Education, Office of Priority Management, U.S. Office of Education, 400 Maryland Avenue, S.W., Washington, D.C. 20202.

Legacy of Parks Program

Under the direction of the U.S. Department of Housing and Urban Development, this program makes it possible for local governments to obtain 50-50 matching funds for new parks, playgrounds, and open spaces, and up to 75 percent for sites centering about urban populations.

High priority will be given to the development and improvement of land already in public ownership--such as undeveloped parks or playgrounds and tax-delinquent lots. Special attention will be given to projects that increase the recreational use of existing and new schools by developing adjoining parks and recreational facilities for nearby residents.

Eligible projects could include parks, mini-parks, playgrounds, open spaces, nature study and environmental education areas, park-school sites, and open spaces involving historic sites.

City officials and others interested in more information should contact "Legacy of Parks" in care of the nearest regional office of the U.S. Department of Housing and Urban Development (see p. 27 for a list of regional offices), or in care of the U.S. Department of Housing and Urban Development, Washington, D.C. 20410.

facilities normally required by the school district are not eligible for assistance under this fund.

Eligible facilities of interest to school officials are group campgrounds that may be used by school classes but not to the exclusion of the general public. Nature trails may be developed in existing public areas for outdoor education field trips. Outdoor education centers, nature huts, braille trails, and, of course, facilities for field sports and general participant-type recreation are examples of eligible Land and Water Conservation Fund projects. A school district is eligible if it has general recreation authority or leases facilities or land to a park or recreation agency for administration.

For information on coordinating Land and Water Conservation Fund assistance with ESEA Title III projects, contact your state education department or the Division of Plans and Supplementary Centers, Bureau of Elementary and Secondary Education, U.S. Office of Education, 400 Maryland Avenue, S.W., Washington, D.C. 20202.

Elementary and Secondary Education Act

Title I - Financial Assistance to Local Education Agencies for the Education of Children of Low-income Families

ESEA Title I provides reimbursement to boards of education of public school districts for programs designed to meet the special educational needs of educationally disadvantaged children in schools having high concentrations of children from low-income families.

Local public school authorities file project application forms with the ESEA Title I unit in the state education department and, after review of project applications, are advised as to the disposition of the project.

Outdoor education projects--including resident programs, school-site development, inner-city programs, and school gardens and farms--have been approved and funded under Title I. Full reimbursement is

also available for educational programs targeted at children whose migrant parents are seasonally employed in agricultural or food-processing activities. In keeping with this, outdoor education programs for children of migrant workers have been approved and funded under Title I.

Title II - School Library Resources, Textbooks, and Other Instructional Materials

ESEA Title II provides direct grants to eligible public agencies for the acquisition of school library resources--including books, periodicals, audiovisual materials, and other printed or published instructional materials. Grants are based on program priorities, standards, and criteria. Library resources concerned with outdoor education could be funded under Title II. Educational agencies should apply directly to their respective state education departments for grant applications.

Title III - Supplementary Educational Centers and Services

Title III of ESEA provides grants for supplementary educational centers and services (1) to stimulate and assist in the provision of vitally needed educational services not available in sufficient quantity or quality and (2) to stimulate and assist in development and establishment of innovative and exemplary elementary and secondary school educational programs to serve as models for regular school programs.

In the establishment, maintenance, operation, and expansion of Title III programs, including lease or construction of Title III programs and acquisition of necessary equipment, the focus is on enrichment of programs of local elementary and secondary schools--especially through offering a diverse range of educational experiences to persons of varying

talents and needs.

Outdoor education programs, particularly those of a comprehensive type, have been funded under Title III. Some of these are resident programs, site development programs, inner-city programs, school gardens and farms, and work-study programs. Grants are also available for (1) studying the possibilities of using existing areas for outdoor education, (2) planning summer education programs, (3) designing conservation centers, and (4) studying the feasibility of cooperative school district outdoor education programs.

Local public educational agencies should file project application forms with the ESEA Title III unit in their respective state education departments.

Title IV - Cooperative Research Program

ESEA Title IV provides grants for research surveys and for demonstrations in the field of education to universities and colleges; other public or private (nonprofit) agencies, institutions, and individuals. Contracts for Small Project Research must require no more than \$10,000 from the U.S. Office of Education and must be completed within 18 months for completion.

Applications must be prepared according to U.S. Office of Education instructions. General project proposals should be sent to the Research Grants and Allocation Staff, National Center for Educational Research and Development, U.S. Office of Education, Washington, D.C. 20202, or to respective regional offices of the U.S. Office of Education (see p. 29).

Title VIII - Dropout Prevention Projects

ESEA Title VIII authorizes grants to local education agencies for demonstration projects involving the use of innovative methods, systems, materials, or programs which show promise of reducing the number of children who do not complete their education in elementary and secondary

schools. Outdoor education programs designed for this purpose could be funded under Title VIII.

Local education agencies may obtain information and project application forms from the Dropout Prevention Programs Branch, Division of Plans and Supplementary Centers, U.S. Office of Education, 7th and D Streets, S.W., Washington, D.C. 20202.

Education of the Handicapped Act

Under this Act, grants are authorized for the purpose of assisting local education agencies in initiating, expanding, or improving programs for handicapped children, including those who are mentally retarded, hard-of-hearing, deaf, speech-impaired, visually handicapped, seriously emotionally disturbed, or crippled.

Some of the provisions of the Act allow for (1) funds to prepare teachers who work in the education of the handicapped, including personnel in physical education and recreation for the handicapped; (2) funds to conduct research in the areas of the handicapped; and (3) funds to develop model preschool and early childhood education programs for the handicapped.

Outdoor education experiences for handicapped children have been approved for funding under this Act.

Local public school authorities file project application forms with the unit for handicapped children in respective state education departments. For additional information on this Act, contact either your state education department or the Bureau of Education for the Handicapped (DHEW), U.S. Office of Education, Washington, D.C. 20202.

Federal Property and Administrative Services Act

This Act provides a means whereby educational and health institutions and civil defense organizations may procure Federal surplus equipment (property) for use in their programs. All property is donated, with a small "service charge" assessed against each item donated.

The property is stocked and displayed in Warehouse Distribution Centers and may be visited by authorized surplus property representatives of an eligible institution for the purpose of reviewing, selecting, and acquiring needed property. Property available under this program includes agricultural machinery and equipment; construction and building materials; instruments and laboratory equipment; photographic equipment; food-preparation and serving equipment; books, maps, and other publications; and recreational and athletic equipment.

Some educational institutions have made excellent use of this resource to obtain equipment and supplies for outdoor education programs.

Information concerning application forms to apply for eligibility to participate in this program is available from your State Agency for Surplus Property. (A list of these state agencies appears on pp. 30-32.)

National Forest Camps

This program is intended to provide school systems and other public agencies with the opportunity to construct and operate camps for recreation and education in National Forests.

For additional information, write to the Forest Service, U.S. Department of Agriculture, Fourteenth Street, S.W., Washington, D.C. 20250.

Recreation and Public Purposes Act

This Act provides school systems and other public agencies with the opportunity to purchase or lease land in the public domain for educational or recreational purposes. Available lands are in states west of the Mississippi River.

For additional information, contact the Bureau of Land Management, U.S. Department of the Interior, Washington, D.C. 20402 (request details concerning Community Recreation and the Public Domain).

Education Professions Development Act

Concerned with the training and retraining of educational personnel, this Act is designed to help local school districts, state education agencies, and colleges and universities develop more effective ways to recruit, train, retrain, and utilize educational personnel of all kinds. Fellowships have been provided for study in the environmental sciences under the Act's Higher Education Personnel Training Programs. For information concerning the fellowship program and participating institutions, contact the appropriate Regional Coordinator, EPDA Fellowship Program, Graduate Academic Programs Branch, Bureau of Higher Education, U.S. Office of Education, Washington, D.C. 20202, or your state education department.

Private Funds

Numerous sources of financial aid are available for outdoor education from agencies, organizations, and foundations such as those discussed in the following paragraphs.

America the Beautiful Fund

Support under this fund is provided for a variety of activities, among which are preservation of natural landscapes, ecology and land projects, artwork and environmental conservation, restoration of American landmarks and small towns, and environmental communications (including conferences and teach-ins).

Individuals should identify a specific environmental conservation problem and state how his energy, skills, and training can be used to improve man-made environments or save and enhance natural beauty. Incentive grants of between \$100 and \$1500 are available, with \$600 being the average seed grant.

Projects should be sponsored by a community group with active civic interests. A letter of one or two pages explaining the project,

summarizing the applicable training and interests, and verifying the community's or institution's interest in having this service should be submitted. Indication should be made as to whether the local government, other civic organization, or a private patron will help support the project financially since local support increases the probability of project success. The use of grant funds asked for should be specified.

Submit the application--directly or through a sponsor such as a local governmental official, the chairman of a university department, or a professional environmental designer--to America the Beautiful Fund of the Natural Area Council, Inc., 219 Shoreham Building, Washington, D.C. 20005.

American Conservation Association, Inc.

This association is concerned with increasing knowledge about environmental problems and enhancing public awareness of critical issues in the areas of conservation, outdoor recreation, and natural beauty.

The association provides modest grants to organizations, as well as directly carrying out its own projects. Emphasis is placed on new programs and projects where modest support appears to hold the promise of maximum effect. Funds are not provided to support curricula or facilities for educational institutions or grants made to individuals.

A letter describing the specific proposed project of the organization should be submitted for consideration to the American Conservation Association, Inc., 30 Rockefeller Plaza, New York, New York 10020.

National Wildlife Federation

The National Wildlife Federation provides conservation fellowships to foster advanced study and research in conservation, natural resource management, and related fields.

An applicant must be accepted as a candidate for a doctoral

degree at an accredited college or university or must be involved in post-doctorate research. Stipends up to \$4000 are awarded for individuals working on a doctorate degree or on post-doctorate research. The closing date for receipt of applications is December 31 of each year.

For application forms, write to Executive Director, National Wildlife Federation, 1412 Sixteenth Street, N.W., Washington, D.C. 20036.

Resources for the Future, Inc.

The purposes of these fellowships are (1) to assist qualified graduate students in completing doctoral dissertation work and (2) to stimulate their interest in the application of social science disciplines to problems in the field of natural resources.

Fellowship candidates must be nominated by the academic department in which they are doctoral candidates. Direct applications are not accepted. Nominees must have completed all requirements for the doctorate except the dissertation. The basic fellowship stipend is \$4000.

Additional information is available from Resources for the Future, Inc., Fellowship Program, 1755 Massachusetts Avenue, Washington, D.C. 20036.

Wildlife Management Institute

Each year, the institute issues a limited number of grants-in-aid to graduate students for work conducted as a part of their academic training. Preference is given to studies concerned with wildlife management.

Letters of application for assistance should be submitted by the first of November. Applications for modest grants have a better chance of receiving favorable consideration.

Specific information is available from the Wildlife Management

Institute, 709 Wire Building, Washington, D.C. 20005.

Small Business

A small business may take 10 percent of its gross income for tax deduction if the business contributes to a nonprofit organization. Additionally, the increased awareness and concern for environmental problems by local business corporations could result in financial assistance for community projects that include outdoor education and conservation experiences.

W.K. Kellogg Foundation

A \$2,000,000 two-part grant program entitled College Resources for Environmental Studies (CRES) is aimed at enlisting the human resources of small, private, liberal arts colleges by encouraging their faculties and students to learn about and protect the environment.

The CRES Resource Grants Program offers aid for these colleges to enlarge their collections of books and other educational materials concerned with environmental problems. The CRES Project Grants Program is a search for special projects relating to the ecological crisis that will challenge students and faculties to produce innovations in curriculum and teaching or service to the surrounding communities.

The W.K. Kellogg Foundation gave some financial support to outdoor education in the earlier years, particularly for programs and facilities for schools in the area of Battle Creek, Michigan. Some grants were made to state departments of education in the late 1940's. While the foundation has not made recent grants specifically for outdoor education, the CRES programs indicate the foundation's interest in the general areas of environmental quality, conservation, and outdoor education.

For information on the CRES program, write to W.K. Kellogg Foundation, 400 North Michigan Avenue, Battle Creek, Michigan 49016.

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Marcia Brady Tucker Foundation, Inc.

This foundation has contributed funds, on a limited basis, for conservation projects. Any organization desiring to apply for a grant from the foundation should present the request in letter form to be examined, processed, and presented to the board of directors. Mail requests to the Marcia Brady Tucker Foundation, P. O. Box 549, Mt. Kisco, New York 10549.

W. Clement and Jessie V. Stone Foundation

The Stone Foundation is dedicated (1) to inspiring individuals to realize their potentials and use their unique talents for the common good and (2) to further programs that encourage positive attitudes toward life and faith in the future.

The foundation supports educational projects which seem likely to make one or more of the following contributions: (1) to solve a significant educational problem by providing an answer that can be used in many other places; (2) to provide important educational services to people who need such services and are not able to get them without outside assistance; and (3) to furnish support for institutions or organizations that are rendering, or show promise of rendering, important educational services.

To obtain an official grant request form, write a letter stating the intent or purpose of the grant and send it to the W. Clement and Jessie V. Stone Foundation, Suite 2720, Prudential Plaza, Chicago, Illinois 60601.

The E. Matilda Ziegler Foundation for the Blind, Inc.

From time to time, this foundation has made modest grants to institutions (public or private), corporations, or individuals engaged in the care, maintenance, treatment, or education of the blind. Project proposals should be sent to The E. Matilda Ziegler Foundation for the Blind, Inc., 250 Park Avenue, New York, New York 10017.

Community Garden Clubs

Community garden clubs can often be sources of financial support for school gardens and other types of outdoor education activities. To obtain the name and address of the president of the garden club in your community, write to The Garden Club of America, Conservation Committee, 598 Madison Avenue, New York, New York 10022.

Community Organizations

Numerous community organizations are possible sources of funding for outdoor education. A few organizations that have given financial support for local programs of outdoor education are the Kiwanis Club, Rotary Club, Easter Seal Society, and Federation of Women's Clubs. These and other organizations in your community should be contacted to determine the support they might provide for outdoor education.*

Summary

Funding for outdoor education can come from many sources. It is felt that, since outdoor education is an integral part of the school program and serves as a means of enriching the educational curriculum, the primary source of funding should come from local school tax funds.

On the following page starts a tabular summary of funds currently available for outdoor education--including state, Federal, and private support. This listing is not all-inclusive, especially due to the fact that the increasing public concern for environmental problems and the importance of education in contributing to the solution of these problems could bring about new sources of funding for outdoor education as a result of school, community, and legislative action.

*A resource that might be used in locating community organizations is Encyclopedia of Associations. National Organizations of the United States, Vol. 1. (6th ed.). Detroit: Gale Research Co., 1970.

<u>Types of Funds</u>	<u>Purpose</u>	<u>Who May Apply</u>	<u>Where to Get Information</u>
<u>Federal Funds (cont'd.)</u>			
Legacy of Parks Program	To meet the recreation and open-space needs of people in cities and towns	Cities, towns, and other local governments	U.S. Department of Housing and Urban Development
Land and Water Conservation Fund	To assist states in preserving and developing outdoor recreation resources	State and political subdivisions	U.S. Department of the Interior
Elementary and Secondary Education Act			
Title I	For the education of children of low-income families	Local school districts	State education department
Title II	For acquisition of school library resources	Public agencies	State education department
Title III	For supplementary educational centers and services	Local school districts	State education department
Title IV	For educational research, surveys, and demonstrations	Colleges, universities, and other public and private agencies	National Center for Educational Research and Development, U.S. Office of Education
Title VIII	For programs to reduce the number of children not completing their education in elementary and secondary schools	Local education agencies	U.S. Office of Education

<p>Education of the Handicapped Act</p>	<p>To provide educational and training opportunities for handicapped children</p>	<p>Schools, local, State agencies and schools</p>	<p>Bureau of Education for the Handicapped, U.S. Office of Education</p>
<p>Federal Property and Administrative Services Act</p>	<p>To provide educational and health institutions with surplus property</p>	<p>Educational and health institutions</p>	<p>State Agency for Surplus Property</p>
<p>National Forest Camps</p>	<p>To construct and operate camps in National Forests</p>	<p>School districts or other public agencies</p>	<p>Forest Service, U.S. Department of Agriculture</p>
<p>Recreation and Public Purposes Act</p>	<p>To provide for lease land for educational or recreational use</p>	<p>School districts or other public agencies</p>	<p>U.S. Department of the Interior</p>
<p>Education Professions Development Act</p>	<p>To train and retrain educational personnel</p>	<p>School districts, colleges, universities, and state education agencies</p>	<p>U.S. Office of Education State education department</p>
<p><u>Private Funds</u></p>			
<p>America the Beautiful Fund</p>	<p>To further conservation, ecology, and environmental projects</p>	<p>Individuals and community groups</p>	<p>America the Beautiful Fund</p>
<p>American Conservation Association, Inc.</p>	<p>To enhance public awareness of conservation issues</p>	<p>Public and private organizations</p>	<p>American Conservation Association</p>
<p>National Wildlife Federation</p>	<p>To foster advanced study and research in conservation and related fields</p>	<p>Doctoral degree candidates</p>	<p>National Wildlife Federation</p>
<p>Resources for the Future, Inc.</p>	<p>To assist graduate students in completing doctoral dissertation work</p>	<p>Doctoral degree candidates</p>	<p>Resources for the Future, Inc.</p>

<u>Types of Funds</u>	<u>Purpose</u>	<u>Who May Apply</u>	<u>Where to Get Information</u>
<u>Private Funds (cont'd.)</u>			
Wildlife Management Institute	To assist graduate students in studies of wildlife management	Graduate students	Wildlife Management Institute
Small Business	To foster community projects concerned with environmental problems	School and community agencies and organizations	Local community businessess
W.K. Kellogg Foundation	To stimulate faculties and students to learn about the environment	Small, private, liberal arts colleges	W.K. Kellogg Foundation
Marcia Brady Tucker Foundation, Inc.	To foster the study of conservation	Community organizations and agencies	Marcia Brady Tucker Foundation, Inc.
W. Clement and Jessie V. Stone Foundation	To assist institutions or organizations that render important educational services	Educational institutions or community organizations	W. Clement and Jessie V. Stone Foundation
E. Matilda Ziegler Foundation for the Blind, Inc.	To assist in the care and education of the blind	Individuals, institutions, or corporations involved with the blind	E. Matilda Ziegler Foundation for the Blind, Inc.
Community Garden Clubs	To develop an understanding and appreciation of nature through garden activities	Local school districts	The Garden Club of America

Indiana

State Board of Health, 1330 West Michigan Street, Indianapolis 46202

Iowa

State Department of Public Instruction, Des Moines 50319

Kansas

State Department of Education, State Education Building,
126 East 12th Street, Topeka 66612

Kentucky

Department of Education, State Office Building, Frankfort 40601

Louisiana

Department of Education, P. O. Box 44064, Baton Rouge 70804

Maine

State Department of Education, Augusta 04330

Maryland

State Department of Education, 13 Maryland Avenue, Towson 21204

Massachusetts

Department of Education, 182 Tremont Street, Boston 02111

Michigan

Department of Education, Box 420, Lansing 48902

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State Department of Education, P. O. Box 771, Jackson 39505

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Department of Education, Jefferson City 65101

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State Superintendent of Public Instruction, State Capitol,
Helena 59601

Nebraska

State Department of Education, State Capitol, Lincoln 68509

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State Department of Education, Carson City 89701

New Hampshire

State Department of Education, State House Annex, Concord 03301

New Jersey

State Department of Education, 225 West State Street, Trenton 08625

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State Department of Education, Educational Building, Santa Fe 87501

New York

State Department of Education, Albany 12224

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State Department of Public Instruction, 1004 Hardimont Road,
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North Dakota

State Department of Public Instruction, Bismarck 58501

Ohio

State Department of Education, Columbus 43215

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State Department of Education, State Capitol, Oklahoma City 73105

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State Department of Education, 942 Lancaster Drive, N.E., Salem 97310

Pennsylvania

Department of Public Instruction, Box 911, Harrisburg 17126

Rhode Island

Department of Education, Roger Williams Building, Hayes Street,
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South Carolina

Department of Education, Rutledge State Office Building, Columbia 29201

South Dakota

Department of Public Instruction, State Capitol Building, Pierre 57501

Tennessee

Department of Education, 132-C Hull Building, Nashville 37219

Texas

Texas Education Agency, Capitol Station, 201 East 11th Street,
Austin 78711

Utah

State Department of Education, 1400 University Club Building, 136
East South Temple, Salt Lake City 84111

Vermont

State Department of Education, State Office Building, Montpelier 05602

Virginia

State Department of Education, Richmond 23216

Washington

State Office of Public Instruction, P. O. Box 527, Olympia 98501

West Virginia

State Department of Education, Charleston 25305

Wisconsin

State Department of Public Instruction, 126 Langdon Street,
Madison 53702

Wyoming

State Department of Education, Cheyenne 82002

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT REGIONAL OFFICES

Region I

Connecticut, Maine, Massachusetts, New Hampshire, New York,
Rhode Island, Vermont: 26 Federal Plaza, New York, New York 10007

Region II

Delaware, District of Columbia, Maryland, New Jersey, Pennsylvania,
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Philadelphia, Pennsylvania 19106

Region III

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Atlanta, Georgia 30323

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Chicago, Illinois 60601

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Boulevard, Fort Worth, Texas 76104

Region VI

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Avenue, P. O. Box 36003, San Francisco, California 94102

Region VII

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Box 9093, Santurce, Puerto Rico 00908

BUREAU OF OUTDOOR RECREATION REGIONAL OFFICES

Northeast Region

Regional Director, Federal Building, 7th Floor, 1421 Cherry Street,
Philadelphia, Pennsylvania 19102 (Connecticut, Delaware, District
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New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia)

Southeast Region

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Regional Director, 3853 Research Park Drive, Ann Arbor,
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U.S. OFFICE OF EDUCATION REGIONAL OFFICES

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New Hampshire, Rhode Island, Ver-
mont

Regional Research Program
U.S. Office of Education/DHEW
John F. Kennedy Federal Building
Boston, Massachusetts 02203

Region II

New Jersey, New York, Puerto Rico,
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Regional Research Program
U.S. Office of Education/DHEW
26 Federal Plaza, Room 1013
New York, New York 10007

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Regional Research Program
U.S. Office of Education/DHEW
401 North Broad Street
Philadelphia, Pennsylvania 19108

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Regional Research Program
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Regional Research Program
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1114 Commerce Street
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Regional Research Program
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601 East 12th Street
Kansas City, Missouri 64106

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Regional Research Program
U.S. Office of Education/DHEW
19th and Stout Streets, Room 9017
Denver, Colorado 80202

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Regional Research Program
U.S. Office of Education/DHEW
50 Fulton Street
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Region X

Alaska, Idaho, Oregon, Washington

Regional Research Program
U.S. Office of Education/DHEW
Arcade Plaza Building
1319 Second Avenue
Seattle, Washington 98101

STATE AGENCIES FOR SURPLUS PROPERTY

Alabama

State Agency for Surplus Property
P. O. Box 1100
Gadsden, Alabama 35902

Alaska

Department of Administration
Attn.: Alaska Surplus Property Service
810 MacKay Building
338 Denali Street
Anchorage, Alaska 99501

Arizona

Arizona Surplus Property Agency
5415 East Washington Street
Phoenix, Arizona 85034

Arkansas

Arkansas State Agency for Surplus Property
State Education Building
Little Rock, Arkansas 72201

California

California State Educational Agency
for Surplus Property
721 Capitol Mall
Sacramento, California 95814

Colorado

Colorado Surplus Property Agency
4700 Leetsdale Drive
Denver, Colorado 80222

Connecticut

State Agency for Surplus Property
60 State Street
Rear of Motor Vehicle Department
Wethersfield, Connecticut 06109

Delaware

State Distribution Agency
P. O. Box 299
Delaware City, Delaware 19706

District of Columbia

District of Columbia Educational
Surplus Property Division
Suite 707, Munsey Building
1329 E. Street, N.W.
Washington, D.C. 20004

Florida

Surplus Property Division
Florida Board of Commissioners of
State Institutions
Gains and Adams Streets, Rm. 509-B
Tallahassee, Florida 32304

Georgia

Surplus Property Services
State Department of Education
1050 Murphy Avenue, S.W.
Atlanta, Georgia 30310

Hawaii

Surplus Property Branch
Department of Accounting and
General Services
759 Kelikoi Street
Honolulu, Hawaii 96813

Idaho

Idaho Surplus Property Agency
P. O. Box 7114
Boise, Idaho 83707

Illinois

Federal Surplus Property
Utilization Section
P. O. Box 1236
Springfield, Illinois 62705

Indiana

Indiana Agency for Federal
Surplus Property
601 Kentucky Avenue
Indianapolis, Indiana 46225

Iowa

State Agency for Surplus Property
Department of Public Instruction
State Office Building
Des Moines, Iowa 50319

Kansas

Surplus Property Section
Department of Administration
Rural Route No. 4, Box 36A
Topeka, Kansas 66603

STATE EDUCATION DEPARTMENTS

Alabama

State Department of Education, State Office Building, Montgomery 36104

Alaska

State Department of Education, Juneau 99801

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State Department of Public Instruction, 1626 W. Washington, Phoenix 85007

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State Department of Education, Little Rock 72201

California

State Department of Education, 721 Capitol Mall, Sacramento 95814

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State Department of Public Instruction, Dover 19901

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State Department of Education, Tallahassee 32304

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State Department of Education, State Offices Building, Atlanta 30334

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Department of Public Instruction, Box 2360, Honolulu

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State Department of Education, 209 Eastman Building, Boise 83702

Illinois

Office of Public Instruction, 312 South 2nd Street, Springfield 62706

Kentucky

Division of Property Utilization
State Department of Education
State Office Building
Frankfort, Kentucky 40601

Louisiana

Louisiana Surplus Property Agency
P. O. Box 44351, Capitol Station
Baton Rouge, Louisiana 70804

Maine

Maine State Agency for Surplus Property
P. O. Box 336
Winthrop, Maine

Maryland

Maryland State Agency for Surplus
Property
P. O. Box 206
College Park, Maryland 20740

Massachusetts

Massachusetts State Agency for Surplus
Property
State Department of Education
182 Tremont Street
Boston, Massachusetts 02111

Michigan

Federal Surplus Property Section
3369 North Logan Street - Station B
Lansing, Michigan 48913

Minnesota

Surplus Property Section
Department of Administration
State of Minnesota Distribution Center
5420 Highway 8, Arden Hills
New Brighton, Minnesota 55112

Mississippi

Surplus Property Procurement Commission
P. O. Box 5778
Whitfield Road
Jackson, Mississippi 39208

Missouri

State Agency for Surplus Property
117 N. Riverside Drive
P. O. Box 1004
Jefferson City, Missouri 65101

Montana

Donable Property Division
State Department of Public
Instruction
State Capitol Building
Helena, Montana 59601

Nebraska

State Agency for Surplus Property
Department of Education
State Capitol
Lincoln, Nebraska 68509

Nevada

Nevada State Purchasing Division
Attn.: Surplus Property Section
P. O. Box 2404
Barnett Way
Reno, Nevada 89505

New Hampshire

New Hampshire Distributing Agency
12 Hills Avenue
Concord, New Hampshire 03301

New Jersey

State Agency for Surplus Property
111 Franklin Street
Trenton, New Jersey 08611

New Mexico

New Mexico State Agency for
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P. O. Box 4757 Coronado Station
Santa Fe, New Mexico 87501

New York

State Educational Agency for
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State Education Building
Albany, New York 12224

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North Carolina Federal Property
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Raleigh, North Carolina 97203

North Dakota

State Agency for Surplus Property
Department of Public Instruction
State Capitol
Bismarck, North Dakota 58501

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State Agency for Property Utilization
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Columbus, Ohio 43204

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Oklahoma State Agency for
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Property Utilization Division
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Salem, Oregon 97310

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Bureau of Federal Surplus Property
2221 Forster Street
P. O. Box 1365
Harrisburg, Pennsylvania 17125

Puerto Rico

Government Services Office
Department of Treasury
P. O. Box 4112
San Juan, Puerto Rico 00905

Rhode Island

Surplus Property Section
Division of Purchases
State Department of Administration
Room B-14, Roger Williams Building
Hayes Street
Providence, Rhode Island 02908

South Carolina

Surplus Property Section
300 Gervais Street, Room 110
Columbia, South Carolina 29201

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State Agency for Surplus Property
20 Colorado, S.W.
Huron, South Dakota 57350

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State Educational Agency for
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6500 Centennial Boulevard
Nashville, Tennessee 37209

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Texas State Agency for Surplus Property
3507 Copeland
P. O. Box 8120, Wainwright Station
San Antonio, Texas 78208

Utah

Utah State Agency for Surplus Property
1850 West 1500 South
Salt Lake City, Utah 84104

Vermont

Central Surplus Property Agency
Purchasing Division
Department of Administration
Montpelier, Vermont 05602

Virginia

Virginia State Agency for Federal
Surplus Property
Department of Purchases and Supply
P. O. Box 1199
Richmond, Virginia 23209

Virgin Islands

Property Division
Department of Property and Procurement
Government of the Virgin Islands of
the United States
Charlotte Amalie
St. Thomas, Virgin Islands 00801

Washington

Surplus Property Section
Division of Purchasing
4140 East Marginal Way
Seattle, Washington 98134

West Virginia

State Agency for Surplus Property
2700 Charles Avenue
Dunbar, West Virginia 25064

Wisconsin

State Agency for Surplus Property
Department of Public Instruction
2534 Fish Hatchery Road
Madison, Wisconsin 53713

Wyoming

Wyoming State Agency for
Surplus Property
State Department of Education
P. O. Box 2106
Cheyenne, Wyoming 82001

DR. THOMAS RILLO

WHAT IS OUTDOOR EDUCATION?

L.B. Sharp

The world
is brought
to school

Educators have learned more and more through the years the importance of teaching from natural situations. Most of the things children learn about are brought to school, to be touched and handled and studied. The school, of course, keeps getting bigger, in order to house the collections from which the children study. We know we are on the right track, for we know the best way to learn is to come in contact with the things we seek to know.

Outdoor education, in its simplest aspect, merely says: Don't try to bring the whole world into the school. Rather, take the children out to where the world is. Outdoor education begins just a step outside the door on the school. On the way to and from school, our youth pass by or through the very things that they go into the classroom to study about.

Taking
children
to the
world

Authors of textbooks pass on second-hand information they have found by observation and discovery. It is always the person who sees, discovers, or explores a situation who gets the most out of it. This, in short, is the whole thesis of outdoor education. Such learning is faster, is more deeply appreciated, and is retained longer.

Getting
to know the
community

The first step out of the school building takes you far enough to find some of the things in nature that are pictured and described in the schoolbooks. First, there is the earth, then even in the poorest neighborhoods, some plant growth, a great deal of weather, and always some animal or insect life. Beyond the school yard lies the community, a fit subject for study, surely. Government, public health, safety, law and order, business, society, industry--all these should be seen first-hand if any useful knowledge of them is to be gathered. And out beyond the community, usually, is the woods and open spaces. This is the outermost circle in which outdoor education operates, and it has a good many values of its own.

OUR SCHOOLS

In a unit of geography, a teacher spent three lessons trying to teach her class about contours, and succeeded only in making them think that contour lines may be found somewhere on the earth, where they would appear to be wavy, as they appeared in the geography books and on the blackboard. But at the rear of the school, there was an eight-foot hill. With encouragement from the teacher, the members of that class could have made their own contour map of their own school grounds. They could have made a level, and with this and a ruler, could have figured the height of that small hill and the percent of grade. This could all have been done in one forty-minute class period, and a fuller grasp of the significance of contours would have been acquired. The unit of learning would have cost the school district less money. Outdoor education is a method of teaching, as well as a principle of using the out-of-doors wherever possible.

On-the-spot civics means more.

In a unit in civics, the high school group learned about the water supply when the city fathers shut down the water in order to clear the corrosion out of the pipes. The school was closed for lack of water. Education, it would appear, had to stop. And when the added pressure on the pipes caused some of them to burst, the school holiday was prolonged. No one thought to take the civics class out to study the municipal water supply, to make tests of the water, to figure the per capita consumption, to study the water table maps to see if it were possible to drill wells, to learn what is meant by watershed, and to learn why restrictions are necessary in the watershed area to insure water supply. Also it would have been a good public service if some of these youngsters had volunteered to help during the water emergency. Education need not have stopped. It could have gone on at an even more exciting and valuable pace. The school, perhaps, had to close down. But that should not put an end to learning. The school is not education; we must learn to think of it as merely the headquarters from which learning activities are directed.

Geology is learned faster outdoors

In another school the teacher and youngsters were studying geology, using a textbook with pictures showing formations to be found in some remote area. While they were studying, within a quarter of a mile of their school, the Highway Department had made a forty-foot cut through a section of a big hill. There, exposed to the eye, were formations of the rock strata of that area representing two-and-a-half million years of geology. There was exposed an eighteen-inch vein of coal. Many excellent fossils were uncovered,

OUR SCHOOLS

as well as leaf prints which told an important story of the formation of the rocks and of the coal. A trip to this cut in the hill would have been worth more than all the lessons in the book. It would have cost less.

Good textbook material and references are valuable in helping students and teachers understand about conservation of our natural resources, but reading alone will not insure genuine understanding. In many schools throughout the country, groups are learning through actual experience about protection of the soil, filling in ditches to keep the soil from washing away, planting trees, making shrubbery piles for game birds, protecting feeding stations for song birds, studying planting and harvesting of crops and what is meant by contour farming. At the same time they are having a chance to see the wild flowers and animals in their natural habitat, to experience the hills, valleys and streams, and to gain a respect for the land. Surely this is essential education for everybody.

Learning
through
experience

There are some things, however, that can be learned better in the classroom. It is merely a matter of selection. For often, we find that the three essentials--teacher, learner, and the presence of the thing to be learned--operate very effectively under the open sky. It is out-of-doors that the greatest integration occurs in the process of learning: Sooner or later everything relates itself to everything else. Learning out-of-doors is a natural process. In a classroom, subjects tend to become artificially separated from the rest of the world. One cannot explore housing conditions in the community without touching history, sociology, health, science and other fields. A group of students cannot undertake field work in science without concern for personal health. And everything in nature leads out, sooner or later, to related subjects of interest. Outdoor education forces the issue of integration in the curriculum, to study and experience things in their total relationships--one thing to the other. It puts greater emphasis upon the facts and ideas that are most important-- a natural selection of important things to know and appreciate.

Some teachers take to outdoor teaching quite naturally. Others learn the new techniques gradually. Some resist completely. It is largely a matter of training. In the main, teachers are trained to do their work in classrooms and other controlled places. They cannot be expected to discover immediately how to

OUR SCHOOLS

Teacher
plays a
new role

handle groups of children in the classroom of the out-of-doors. A teacher using the out-of-doors has to overcome the fear of not knowing something when she is asked. There is that deep-seated feeling, a part of the teacher, that she is paid to know things. With the growth of outdoor education it is coming to be accepted that the teacher will have quite a different outlook. The spirit of learning together is now more characteristic than the attempt to play the oracle who knows all.

With the spirit of observing together and learn-together, comes a better relationship between student and teacher. Many of the worst abuses of teaching tend to disappear. If the student may ask a question without raising his hand--and thus, perhaps, stumble upon something the teacher doesn't know--he may also express his own views in his own natural voice; and that is certainly good. In the outdoor classroom the student stands beside the teacher; they are facing in the same direction, looking toward the object that is under observation; they are partners in learning. Teachers who have given outdoor education a trial are quite emphatic in saying that it improves the chances for mutual trust and confidence. And they say, further, that when they go back into the indoor classroom with those same students, much of the stiffness has gone out of the educational process, to be replaced by a new kind of eagerness never before seen within those walls.

Lessons
from the
woods
beyond

The greatest benefits of outdoor education only come, however, when students and teacher take to the woods together. This is recommended as an occasional departure in school life, not as a substitute for school. There is great benefit in a single day of it if that day has been well planned as an adventure in learning. The benefit multiplies if the adventure stretches over several days or longer-- if it becomes a camping experience. Camping stands at the very peak of outdoor education; and school camping, in many school systems, has come to play a very important part in the learning process. School camping is not something to do when school is over; but something you do in order not to miss the benefits that are so easy to gain when a group goes into the open to live and study together.

The experience of living in the out-of-doors together as a regular part of the school program is not a fad, a frill or an extra.

OUR SCHOOLS

Indeed, it is a must for the modern school. Here students meet the more subtle problems involved in group living, the problems connected with the unselfish and unbiased consideration of others, the problems involved in fears and prejudices. Thrown together in a single group with others who have different backgrounds--social, racial, economics, religious--the student learns good and valuable lessons very quickly and by very natural means. Lessons in democracy do not have to be instigated and assigned by the teacher.

A few years ago, the New York City Board of Education sent out some classes--fifth and seventh graders--to live in a favorable camping environment during regular school time, in order to test the effectiveness of learning out-of-doors.* These classes were not "excused from school"; they were sent to school at camp. When the experiment was over, these pupils had to take the same tests and examinations that were given to the corresponding classes that stayed in New York City, in school. The camping group had to solve all their own problems as they went along; and the test was to see whether they learned as much along specific subject-matter lines, as did those who studied the subjects in the orthodox manner. What else the camping group learned was extra. At camp the youngsters took exploration trips to the lake bog, to the hills, and to the marsh lands. They worked with their hands in the soil. At the camp farm, they gathered eggs, milked cows, fed pigs. They saw how potatoes were grown. They lived in small groups, planned most of their own menus, and cooked their meals over the open fire. They operated their own bank and used checkbooks; they ran their own post office. They modeled out of native clay, cut wood for the fire, built and repaired shelters, went on overnight trips and slept under the open sky. The wide range of new experiences and the problems of living and working together added up to an impact upon their lives that the usual school experience was not able to make; but did these children lose out in their regular lessons? Two control groups were used, of corresponding grades. These groups stayed in school and followed the regular lesson plans. Tests were given in both groups before and after the three weeks' camp. On the majority of tests, the camp group was superior. The fifth grade's arithmetic score was far superior to that of the grade that stayed in school and studied arithmetic.

*Extending Education Through Camping. Published by Outdoor Education Assn. Inc., 800 S. Ill., Carbondale, Illinois.

DR. THOMAS J. RILLO

Summary of School Site Resources and
Suggested Outdoor Education Activities
for First Grade

All of the school grounds have common resources and excellent outdoor education potential. Some schools, because of proximity to adjoining land or relatively larger school ground size, present more outdoor teaching-learning possibilities. The suggested outdoor activities are stated briefly. More elaboration is necessary to gain the full educational scope and implications of each activity. Preparation and follow-up are necessary if the full impact and value of the outdoor experience is to be realized. After understanding the activity, the teacher should develop suitable preparatory and follow-up lessons. It is recommended that the outdoor education experiences correlate as closely as possible with the courses of study in the classroom.

Common school site resources include:

1. Grass, bare soil, and blacktop play area.
2. Lawn areas containing crab grass, wild onion, etc.
3. Parking areas covered with crushed rock.
4. Wire screen incinerators for refuse.
5. Sidewalks, telephone poles, wooden posts, flag pole, drainage areas and culverts.
6. Trees and shrubs bordering the grounds and used in landscaping around building.
 - a. Deciduous (losing leaves in winter) include maples, sycamores, oaks, and others).
 - b. Coniferous (evergreen) include juniper, cedar (in most cases), and others.
7. Tree stumps cut by hand or power tools.
8. Evidence of erosion.
9. Brick buildings (or schools covered with concrete stucco).
10. Soil - including silt, cinders, rock, gravel, clay, etc.
11. Relatively flat, open land. (Some land gently sloping.)

Suggested School Site Outdoor Education

Activities for Primary Grades

A. Trees and Shrubs

1. Sketching tree shapes (silhouettes).
2. Estimating height in relation to pupils.
3. Studying bark patterns, textures, colors.
4. Finding root systems (exposed by erosion).
5. Comparing deciduous and coniferous tree characteristics.
6. Comparing fruits, seeds, buds, leaf scars, leaves.
7. Measuring distance around (circumference) and distance through the center (diameter) with a string tape measure marked off with knots one inch apart.
8. Comparing trees and shrubs.
9. Testing bark thickness.

B. Stumps and Posts

1. Figuring the method used in cutting and possible reasons for cutting.
2. Rubbing with pencil or crayon on paper to get an impression (tracing) of the growth rings.
3. Finding decay and insect evidence.
4. Finding clues that show what forces are acting on the stump.
5. Comparing wood that has been painted or treated with other preservatives to untreated wood.
6. Figuring out why posts have been put into the ground in certain locations.

C. Grass and Other Vegetation

1. Finding effects of people, animals, sunlight, shade, wind, water, etc. on plant growth.
2. Finding locations where plants grow (cracks in sidewalks, school buildings, tree stumps, etc.)
3. Tasting wild onion.
4. Finding effects of plants on erosion and erosion on plants.
5. Studying small, measured plots of ground for strengthening observational skills.
6. Rubbing plant pigments on sandpaper.
7. Keeping records of the heights of small plants with strips of colored paper by gluing the strips to a piece of cardboard to make a growth graph.
8. Studying the roots of grass or other plants by carefully washing away the soil.
9. Tossing a wire hanger ring to study plants in a lawn.
10. Comparing how seeds travel from place to place.

D. Shadows

1. Estimating length of shadow in relation to object casting it.
2. Marking the position of the shadow on the ground with chalk or sticks. (Note the change in length and position after a few minutes, and hours.) (What causes the shadow to move?)
3. Comparing the shadows cast by the flag pole, posts, trees, persons, buildings, etc.
4. Comparing shapes of shadows to the object casting the shadow.
5. Observing how shadows fall according to the position of the sun.

E. Sidewalks

1. Examining what they are made from and how they are made.
2. Finding plants growing in cracks.
3. Finding wearing away by forces of weather and people.
4. Finding soil washed onto them and determining where it came from.
5. Studying where the sidewalks have been placed and where they are needed.
6. Finding where tree roots have pushed up the sidewalk.

F. Animal Life

1. Observing birds, squirrels, insects, etc. (Bird clue outline sketching.)
2. Finding animal homes (under logs and rocks, in tree bark, holes in trees, nests, etc.).
3. Finding tracks in the mud (including human) and taking plaster of Paris casts of them.
4. Finding other evidence (cocoon, droppings, borings, earthworm holes, beetle borings, etc.)
5. Establishing bird feeding stations near a window. (Simple feeders may be made from pine cones, coconut halves, holes drilled into a small log, or similar containers for suet. (try a mixture of seeds, Crisco, peanut butter, and bacon fat.)
6. Keep records of when birds arrive.
7. Noticing how carelessly dropped food is quickly eaten and carried away by various animals.

G. Weather

1. Comparing cloud formations.
2. Finding wind speed with wind measurer (card and thread) and flag movement.
3. Finding wind direction with balloons and bird feather vane.
4. Comparing effects of object (such as buildings or vegetation) on wind.
5. Exploring little climates (differences in temperature in different places on the school ground).
6. Seeing the effect of rain on soil erosion (set up splash boards and water soil with watering can).
7. Tracing rain that falls on the school building. (Where does it go? Roof, gutter, drain culvert, etc)
8. Examining weathering bricks, wood, and paint on school buildings.
9. Illustrating air pollution by holding clean cloth in smoke.
10. Observing where a puddle has dried up.
11. Finding where ice or snow is melting.

H. Soil and Water

1. Comparing size of soil particles. (Shake up soil in a jar of water and let it settle.)
2. Comparing color of soil in different places.
3. Smelling soil to find out if it has an odor.
4. Comparing color and moisture of soil from the surface to two feet deep (use a soil auger).
5. Measuring soil compaction in different places. (Use a soil compaction gauge.)
6. Finding out how fast water soaks into the ground in different places. (Bottomless tin can sunk in ground.)
7. Comparing erosion at different places on the school ground. (Noting evidences of erosion, i.e. deltas, gullies, exposed roots, etc.)
8. Examining soil with a hand lens. Separating the parts of soil into piles of the same material. (Pebbles, roots, leaves, sand, etc.)
9. Listening to different soils when rubbed between the fingers and held to the ear.
10. Measuring the temperature of the soil in different spots.
11. Squeezing samples of different kinds of soil together to see if they form a ball.
12. Collecting some muddy water from some puddles or drainage ditches. Allow the suspended soil to settle to the bottom. Compare the amounts of soil in different places.
13. Pouring some water into a jar of soil. Noticing the air bubbles that rise to the top.
14. Measuring root exposure or the depth of gullies with strips of paper. Paste them to a piece of cardboard to record measurements of soil erosion in different places.
15. Comparing plant growth in different kinds of soils

I. Rocks and Minerals

1. Making soil by rubbing two rocks together.
2. Arranging rocks according to color, texture, hardness, luster, fabric and other characteristics.
 - a. Scratching rock on sandpaper or unglazed porcelain tile for color streak.
 - b. Examining a rock with a hand lens to see the size of the particles. (Texture)
 - c. Rubbing two rocks together to see which one makes a scratch in the other. (Hardness)
 - d. Observing if the surface of the rock or mineral reflects light or appears shiny. (Luster)
3. Finding rocks that break differently by comparing edges.
4. Finding rocks that have been worn smooth by water or cracked by the weather. (Comparing a freshly broken surface with a weathered one.)
5. Comparing man-made rock (bricks) to naturally made rock.
6. Comparing the weights of the different kinds of rocks of the same size.
7. Finding different kinds of fossils.
8. Making impressions of fossils in clay.
9. Finding where plants are growing on and slowly breaking down rocks.
10. Making a survey of the different kinds of rocks on the school grounds.
11. Finding rocks that show signs of rusting.
12. Finding ways that rocks are useful to man.

J. Art

1. Finding "lines" in the environment:
 - a. circle - sun, moon, berry, woodpecker's hole.
 - b. zig-zag - tree rings, edges of leaves, building and trees on the horizon.
 - c. wavy - path of a brook, ripple of water, soil.
 - d. straight - tree trunk, vein in a leaf, a pine needle, a blade of grass.
 - e. finding other shapes in the environment.
2. Finding design in movement:
 - a. draw lines to show how different birds fly.
 - b. draw lines to show how branches wave in the wind.
 - c. draw lines to show how clouds move in the sky.
3. Finding design in sound:
 - a. draw a sound the way it might be put down on paper using dots, light lines, dark lines, zig-zags, spirals, straight and wavy lines. (Wind in grass and trees, squirrel's, dog's bark.)
4. Finding design in color:
 - a. using rocks, sticks, leaves, etc. rub on sandpaper to see the color.
5. Finding design in texture:
 - a. draw and describe the following: bark of trees, stumps, blade of grass, sidewalk, feather.
6. Constructing collages from natural materials such as cones, pebbles, twigs, leaves, etc.

K. Pond

1. Netting and studying pond plants and animals.
2. Finding the average depth of the pond.
3. Making a simple map of the pond.
4. Finding the temperature of the water in different places and at different levels.
5. Using a microscope and hand lens to discover microorganisms.
6. Finding where the plant and animal life is most abundant in and around the pond.
7. Finding evidence of water pollution.
8. Discovering if shade changes the water environment.
9. Determining the acidity and alkalinity of the water and the soil around the shore.
10. Marking off the watershed of the pond.
11. Figuring the surface area of the pond.
12. Figuring the volume of the pond.
13. Finding the turbidity of the pond.

L. Miscellaneous

1. Finding litter (refuse) on the school grounds and having the children collect and display the litter to the school.
2. Using a 10x hand lens to open up a new world to the students.
3. Writing round-robin stories of observations. (Recorded by leader or teacher.)

4. Helping to beautify the school grounds by correcting erosion problems, planting trees, grass, flowers, etc.
5. Planning, planting and harvesting a garden.
6. Making simple maps of the school grounds.
7. Calculating the heights of trees, buildings, flagpoles, etc.
8. Examining the mill stones and noting construction and evidence of wearing and weathering.
9. Finding ways that trees are useful to man.
10. Learning to determine direction with a compass.
11. Using "Cluc Chart."

DR. THOMAS J. RILLO

ENVIRONMENTAL ECOLOGICAL EDUCATION

by

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The Need

A world community of scholarship exists in the field of conservation; in great part, scholars know what needs doing to conserve our land and its resources. A world community of generosity toward the land and its resources does not exist. Although, in great part, we know what to do, we are not doing it. A Conservation Ethic has not yet been accepted by the average citizen as a concept of first importance and consequently has not become an essential factor in shaping our national purposes nor our national education program.

We are living at a period of history in which environmental changes of unprecedented proportions are taking place at an accelerated rate. If these changes continue in the present manner, man may soon be locked with man in a mortal struggle for living space, breathable air, potable water, and the other resources which make a civilized life possible. It is a world crisis rapidly coming to point, leaving no country and no manner of life unscathed.

We are not, as we have said, without knowledge in ameliorating the crisis, but we have not been skillful in consolidating, extending, and disseminating the information by which men generally could attain the skills, gain the attitudes, and regain the hope based on the knowledge which will return man to his place of responsibility for other men, other lands, other resources.

The aim of conservation education must be to illuminate a construct of the world in which man will live in harmony with the land; to consolidate this world; to extend and disseminate it in an attempt to hasten a world community of generosity towards the land and the resources men use to live and to fulfill themselves.

A Strategy for Conservation Education

Environmental education is total education. It involves science; indeed, science is central, otherwise species and environmental factors interacting in the lives and populations of living things can have no meaning. We have the scientific know-how to solve most, if not all, of our environmental problems--the problems of pesticides, pollution, poverty of the environment, and population--the "P" problems.

But decisions regarding man's use of the environment are not always based on scientific knowledge. They are often based on economic feasibility, social desirability, political expediency, or religious belief. So the social sciences come within the purview of environmental education. Finally, if the things in the environment which ennoble man also ennoble his use of the environment, then the humanities must have a place in our plan.

Conservation, indeed, has become a field as broad as life itself, and so as broad

as education itself. Therefore we must be dedicated to the improvement of all education, on the clear assumption that where this is done, the teaching and understanding of environmental education are best done. We also know that the lifelong habits, attitudes, and values of individuals are developed in the early school years. If we accept the view that man is steward of his environment, then it follows that how he educates his young will determine their use of their environment. Ours is the challenge of developing in our youth a responsibility for maintaining the fitness of their world, and also the responses adequate to recognition of the elements which upset or foul the environment, and in so doing, destroy beauty and bounty.

We are persuaded that what is not in the mind cannot be translated into attitudes. We cannot ask our children to conserve that which they do not know. Why should the child who has not been conserved be concerned about the environment and the living things in it?

Structure: Elements in an Instructional Program in Conservation

1. An educational plan (curriculum) in which the concepts embodying thought and deed relating to conservation are pervasive throughout. These concepts must be within the scope of the life of modern man. We can no longer limit our attention to soil, water, forests, etc., when the new "P" problems involve all the school disciplines. Education must involve the total environment, including man.
2. Education in the total environment. If it is total, it means both the external and internal environment. It means outside the school, in the community, as well as inside the school. It means inside the person as well as outside the person, because the reasons people conserve are purely internal reasons, and if we do not explore these, we make no sense. Why one conserves is the basic reason to understand how one conserves, and why one conserves is internal.
3. A total environment for education. Just as we must have education for the total environment, we must have a total environment for education. The environment is the most efficient laboratory in which to provide children with experiences which will help them develop concepts of environment. Teachers must be trained to give children these experiences, and outdoor laboratories must be a part of every school facility, even in the inner city. The community must be considered as an extension of the school property. It must become a sanative environment, in which can be developed attitudes which can be extended to the nation and the world. Then children will conserve because they are part of their environment. They will conserve their environment because their environment conserves them. We can look forward to citizens who have come to the conclusion that they conserve because fitness to the environment means they have made the environment fit to themselves.
4. Youth programs. While we consider the school as the essential element in any strategy for conservation, we must remember that children spend only twenty-five percent of their time in school. Youth programs become important, especially in the conservation of the inner child, and especially the inner child in the city, who must be provided with experiences in the environment if he is going to

be conserved and if he is going to conserve. There are several approaches:

- a. Organized camping. Opportunities for inner city children to live and work in the environment can be provided within the existing organized camping program. It is not generally realized that the first conservation and outdoor camping programs in America were designed for inner city, disadvantaged children (Life Camps, Herald Tribune Fresh Air, Sheltering Arms, etc.). The preliminary planning for such a nationwide program has just been completed.
- b. Trip experiences in the nation. A series of camps across the nation could be used to take children around their nation, to study and explore their environment. Transportation could be provided by bus, or by the presently idle pullman cars which could provide rolling camps or schools. Teachers and children would be conserved by such a program. A pilot program under Title III in Idaho will test the usefulness of this railroad idea.
- c. Nature centers and museum programs. Excellent supplemental programs are being provided by nature centers and children's museums in many parts of the nation. This program should be expanded.
- d. Neighborhood pools and recreational facilities. Many of our citizens go through life without ever swimming. This does not make sense in an age when relatively cheap backyard pools are available. They are found in every suburban backyard. Why not one or two for each city block, followed by the improvement of the surrounding area. This has been done with great success in some of the burned out areas of Newark, New Jersey. It could be done nationally at a fraction of the cost of some of the present programs for inner city youth.

To coordinate the planning and organization of such an extensive program of environmental education, there must be a national center and supplemental regional centers. The centers would provide:

1. Conferences. Scholars and leaders in conservation thought, both lay and government, will meet for study and discussion.
2. Courses and seminars for educators and teachers.
3. Curriculum studies in all subject areas at all levels of education.
4. Publications to disseminate the deliberations of conferences, findings of seminars and studies, and improved instructional materials as developed.
5. Development of facilities which will assist in stimulating thought and practice in conservation, including outdoor laboratories of all kinds.
6. Services to encourage coordination of effort among the many diverse, and sometimes divergent, programs in environmental education.

7. A continuing reconnaissance of the nation's resources, and service as a clearinghouse for their findings.
8. A constant review, development, and improvement of instructional materials that will have impact nationally and internationally.
9. A "Journal of Conservation Education" which will serve as a clearinghouse for publication of theory and technique designed to improve educational practice in conservation.
10. A Board of Editors of distinguished scientists, economists, and political scientists to assist in the development of a series of volumes designed to bring the modern principles of resource use to the public.
11. A program for the continuing education of school administrators, supervisors, and teachers responsible for conservation locally. These plans include annual summer institutes for fifty selected educators responsible for curriculum innovation in fifty states. At the end of ten years, 500 leaders would have been trained (ten for each state). These leaders would form the nucleus for State Councils for the Improvement of the Environment.

There is no national center from which coordinated programs of this kind can be initiated, no clearinghouse for information and review of new instructional materials, no central place to which scholars in conservation can repair for consultation and study.

Central to the success of any national program of environmental education is recognition of its importance in the program of the U.S. Office of Education, HEW. Evidence for this need lies in the fact that over one hundred conservation and outdoor education programs have been financed under Title III of the ESEA of 1965, yet consultant help or evaluation of the projects was the responsibility of a single specialist for environmental education, operating without a travel budget.

Every effort must be made to extend the work of the U.S. Office of Education if we are to serve the nation's need in conservation--if we are to serve the conservationist and the teacher, the camp director, and the recreation supervisor in the inner city, by helping them to further their understanding of the art and effort required in the use of natural resources for the common good.