Integrating environmental education into the curriculum through the use of a nature trail

Karin J. Parks

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INTEGRATING ENVIRONMENTAL EDUCATION INTO THE CURRICULUM THROUGH THE USE OF A NATURE TRAIL

A Project
Presented to the
Faculty of
California State University
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education: Elementary Option

by
Karin J. Parks
1992
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Approved by:

Dr. Sylvester Robertson 5/7/92

Dr. Ruth Sandlin 5/6/92
Integrating Environmental Education into the Curriculum through the Use of a Nature Trail

Karin J. Parks, M.A.
California State University, San Bernardino

Statement of the Problem

The purpose of this project was to provide a means by which third grade students could become involved in environmental education activities through the use of a nature trail.

Math, language arts, and fine arts lessons were developed to teach environmental concepts and to show teachers that they do not have to have a strong science background in order to make children better aware of their planet and to develop a positive attitude in keeping it alive.

Procedure

A review of the related literature revealed that environmental education is a weak area for many teachers who feel they do not possess a strong science background. It was then determined that more materials are needed to be developed in the non-science academic areas by which environmental concepts could also be taught. The writer then decided to develop lessons for third grade students in math, language arts, and the fine arts. These lessons would be taught using a nature
trail which the students themselves planned and developed, with the proper guidance.

Goals and objectives were written for each lesson. The goal statements were taken directly from a third grade curriculum guide, so that each lesson fulfills a need of the district and that of the teacher (Big Bear Curriculum Guide, 1989).

Results

The activities in this project have not been field tested, but they have been well received by a few professors on campus who have evaluated them. When this project is put into action in the near future, an assessment of its success can then be made.

Conclusions and Implications

This project was developed around the third grade curriculum to enable teachers to feel confident in teaching environmental education to their students in non-science academic areas. Each lesson should be easy to follow and can be used by other grade levels with a few changes. The nature trail provides a way to complete these activities and enable students to get outside and participate in hands-on activities.

As educators, a need has developed to teach students to become stewards of their planet, and this project is the place to start. Our environment must remain alive and healthy for all.
DEDICATION

This project is dedicated to:
Peter Parks,
my husband, for all his love
and understanding during this
entire project
and
to my son, Sky:
May he grow up to enjoy
a clean, healthy environment.
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INTRODUCTION

Environmental education is a discipline that deals with interrelationships among people, nature, and artificial surroundings. It is intended to promote among citizens the awareness and understanding of the environment, our relationship to it, and the concern and responsible action necessary to assure our survival and to improve the quality of life (Griffith, Landin, & Jostad, 1971).

Environmental education is a relatively new academic discipline. Its birth corresponded with the first Earth Day in April 1970. Its overwhelming popularity over the past ten to twenty years has come about with the ever-increasing global problems we are facing today.

Problems such as pollution, overpopulation, and the dwindling supply of natural resources are all serious issues. From these problems, a social need has developed to which the entire educational system must address itself. The students of today will be the voting citizens of the planet tomorrow, and therefore must be taught to become acutely aware of their vital relationship with the environment.

Knowledge about the environment is commonly developed in science classes. However, scientific knowledge is not enough. Students need to develop a
deep moral and spiritual awareness of the values of a sanative natural environment (Studebaker, 1973). Additionally, environmental issues need to be integrated throughout all subject areas.

Integrating environmental education into all subject areas is something that does not take place in many school districts, and specifically in the district being studied. At best, environmental issues are casually scattered throughout the curriculum and are taught by relatively few teachers. In order for integration to be successful, teachers and administrators must be committed to teaching this discipline. Without a unified effort, few students will learn about their interrelatedness with the environment, leaving the rest to continue to destroy the planet.

Gilbert M. Grosvenor, President of the National Geographic Society, stated that one of the organization's goals over the next century will be "to encourage a better stewardship of the planet" (National Geographic, 1988, p. 766). Children need to become stewards of the planet Earth, and learning about environmental issues will help them understand how to fulfill this responsibility (Salter-Riggs, 1989).

In 1970, PL 95-516, the Environmental Education Act, was passed. It is defined as, "The educational
process dealing with man's relationship with his natural and man-made surroundings, and includes the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning to the total human environment" (91st Congress, 1970).

This definition of environmental education is a way to try and synthesize all the different parts of this complex discipline. Outdoor education, ecology, nature study, science education, and conservation education are all labels given to environmental education that do not encompass the total concept. Each of these names carries with it an area of study within the environment, and they must all be included for environmental education to be fully defined.

Some educators feel that environmental education should be added on to the curriculum or taught as a special unit. This is not a strong position (Arnstein, 1971). Environmental education must be integrated throughout the entire curriculum or its importance will not be engrained in students' minds. Educators must begin to work together to learn how to manage and deal with the environment. They must view the world globally and see the whole relationship between humans and nature, not just their own.
To facilitate environmental education, teachers, both old and new to the profession, need to take charge. They are the key decision makers in choosing the course content in their classrooms. Many instructors are afraid to get involved in environmental education because they feel they must have a science background. It is probably true that what they need more than a science background is a commitment and a positive attitude about teaching this discipline (Stone, 1989).

In 1978, Jaus conducted a study to find the effect of 30 hours of environmental education on elementary and middle school teachers' attitudes towards teaching environmental content in their classrooms. He found that teachers who were trained in environmental education developed more positive attitudes than those who did not receive this training. If children are to develop positive attitudes toward the environment, then the first logical step is to produce teachers who are competent to teach environmental education in their classrooms.

All subjects presently in the curriculum can be taught with some environmental influence. Environmental matters touch the humanities, social sciences, physical sciences, and life sciences. If students are not taught to preserve the life support
system, then our industrial society will end (Studebaker, 1973).

To help make this integration into a rural mountain community in the Southern California mountains successful, a nature trail will be planned and constructed with the help of third grade students. The nature trail will be used to teach academic concepts and a respect for the environment.

The activities planned for use on the nature trail will be from three academic disciplines: math, language arts, and the fine arts. Science was not chosen because it is what educators fear most about teaching environmental education and it is also what most environmental education packages focus their lessons on. The stated objectives for the lessons will come from a third grade curriculum guide for math, language arts, and the fine arts, so teachers can be sure to cover what is expected.

 Meaningful lessons, such as counting the rings on a tree to determine its age and the year it was planted, will help children with their computation skills. Learning how to write a poem concerning an environmental issue and using the Haiku format will also help them learn about their interrelationship with the environment and the role they play in protecting it.
A nature trail will allow children to get out of the classroom and participate in action-oriented activities that will teach them firsthand about the living, breathing planet that we all inhabit and why it is so crucial to keep it alive.
Environmental education must include three major tenets in order to have a cohesive program. Environmental education should be guided by goals and objectives, it should be interdisciplinary, and it should advocate a holistic view of the environment (Ham, Langseth, & Fazio, 1985).

Goals are the desired outcomes which are stated from a general perspective and objectives are specific statements of intended outcomes that are measurable and quantifiable. Goals and objectives will give a program a purpose and will help facilitate evaluation criteria.

For environmental education to be interdisciplinary, it must stress many, if not all, areas of the school curriculum. Children need to learn that the environment is not only a part of science class, but that it is related to all that we do in each subject area.

The last tenet is that environmental education should be viewed holistically. The environment is not just the desert or the forest, but for many it is the city. What habitat a child lives in will most likely determine what his or her environmental focus will be. The general ecological concept learned should, then, be
generalized to other habitats to get a global understanding of the ecosystem.

A study conducted by Disinger (1989) looked at how environmental education is accommodated in school curriculums: as separate courses or through infusion. State education agencies were sent a survey questionnaire, with 40 of the 50 states responding. It was found that elementary schools include environmental education topics in their curriculum almost entirely by the infusion model.

In a self-contained classroom, this is the most practical method. An additional subject area or time slot does not have to be added, but rather an environmental topic can be infused into a writing or math lesson which already exists in a teacher's plans.

The most important goal of implementing an environmental education program into the curriculum is to educate an individual who will not only be aware of the need for a quality environment, but one who will also be motivated to demonstrate a commitment to improve his or her social and physical environment (Keach Jr., 1973).

The program one uses needs to be action-oriented. Beginning awareness activities must lead to a sequence of activities that involve action. The type of problems or areas of study that are to be taught must
also be relevant. An occasional newspaper article or mention of an environmental concern will not benefit the child. He or she needs to understand how the problem affects him or her and what can be done about it (Keach Jr., 1979).

Involving parents and the community who have an interest in the environment is a wonderful addition to the growth and strength of the home-school relationship. If children see other people involved and concerned about the environment, then they too will want to model those behaviors.

Although infusion seems to be the most widely used approach, how each district, city, and state views the environment is quite different. Environmental education thrives in some areas and is lightly touched upon in others. If the educational system is to make a change, then everyone must participate wholeheartedly (Troy & Schwaab, 1982).

Teacher Involvement -- Old and New

Many teachers today fail to incorporate environmental education into their curriculum because of lack of time. Their schedules are just too busy. Many also feel that, since they do not have a science background, they are not adequately prepared to teach about the environment.
What needs to be done with prospective teachers entering college is to prepare them with a background in teaching environmental education. Colleges and universities do not have to revise their whole program, but rather by the process of infusion, environmental education components can be inserted into presently existing teacher education courses (Stone, 1989).

Texts for methods courses should contain sections related to environmental concepts and approaches to teaching them in the classroom should be given. Colleges and universities should only buy from publishers that contain this information (Stone, 1989).

By using the method of infusion, new teachers will see how environmental concepts can fit into all areas of the curriculum, such as math, language arts, social studies, fine arts, and not just science. In many cases, the science methods courses are the only classes that touch upon environmental education, and this is where a change must take place.

Instructors at institutions of higher learning must also become familiarized with environmental education content through inservicing, and by keeping up to date with current issues. They must possess the willingness to learn and have a positive attitude about integrating environmental education into their classes.
Teachers who have been teaching for a number of years will not have the opportunity that upcoming teachers will have. However, they must also become informed on how to integrate environmental education into all areas of the curriculum.

Inservices must be held during school time to show just how integration can be accomplished. References, kits, and programs must be made available and demonstrated on how to use these sources on a regular basis. Training should be provided in using the classroom and school yard sites for environmental education activities. The program should be motivational, especially for non-science teachers who are unsure of their competence to teach environmental education in their classrooms (Ham & Sewing, 1988).

A reference library of environmental education materials appropriate for each grade level could be provided to help teachers become better acquainted with content areas and to help in their planning (Ham & Sewing, 1988).

It is hoped that all teachers should believe in the importance of integrating environmental education into their classrooms for the program to really work. One or two teachers who are environmentally aware will not make a difference; it must be the whole staff, including the principal. Children can sense if there
is a real concern by the way a teacher delivers the content; this is why a true commitment must be shown.

Existing Programs

The four most widely distributed environmental education curriculum packages are Project Learning Tree (1987), Project Wild (1985), Project Wild Aquatics (1987), and Living Lightly in the City (O'Connor, 1985; O'Connor & McGlauflin 1982).

These four curriculum packages were examined by Simmons (1989) and given a percentage as to how many of their activities are geared toward the different subject areas: science, social studies, language arts, math, art, and health. Results show in Table 1 that science was the main focus for all four curriculum packages, with social studies being the next most frequently listed category.

Having these packages available has played an essential role in getting environmental education into the schools. However, in order for infusion to become a reality, a greater variety of curriculum material needs to be developed in non-science subject areas. When curriculum development in environmental education is to take place, a major emphasis should be on creating activities for math, art, music, and health. Teachers must be shown that a strong science background is not a prerequisite for teaching environmental education.
Table 1 - Number of Available Environmental Education Activities Categorized by School Subject Area

<table>
<thead>
<tr>
<th>Curriculum Area</th>
<th>Curriculum Package</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Project Learning Tree</td>
</tr>
<tr>
<td>Science</td>
<td>62</td>
</tr>
<tr>
<td>Social Studies</td>
<td>54</td>
</tr>
<tr>
<td>Language Arts</td>
<td>27</td>
</tr>
<tr>
<td>Mathematics</td>
<td>24</td>
</tr>
<tr>
<td>Art</td>
<td>18</td>
</tr>
<tr>
<td>Health</td>
<td>11</td>
</tr>
</tbody>
</table>

* totals reflect percentages from two volumes combined (K-7 & 4-6).

(Ham & Sewing 1988).
A school located in a small town in southern California is a prime example of how environmental education can be successfully integrated into the curriculum. This school was selected as having the best environmental education program available to students in California, and as one of the ten national exemplars in environmental education by the National Science Teachers Association in its 86-87 search for excellence.

This school's environmental focus began ten years ago when it became a magnet school in the desegregation program of the San Bernardino City Unified School District. The objectives of its program are to promote awareness, appreciation, understanding, and knowledge of the interrelationship between one's self and one's total environment (Stoner & Overbey, 1989).

Their goals of having environmental education for all students in an articulated, sequential program are very effective and should be goals which other school districts could follow. Five key ingredients make up the way their program is presented: the textbook, technology, hands-on activities, outdoor experiences, and interdisciplinary application of environmental science. Class and small group pull-out instruction are used to teach the children.
The pull-out program reinforces the concepts that are learned in class and also includes such activities as working on the computer, monitoring the weather station, and observing birds and other animals. This pull-out program is run by a full-time environmental education resource teacher.

A pond, a greenhouse, a lath house, a weather station, an amphitheater, and a garden are all resource sites which are used on campus. Each grade level, K-6, studies a different area in the environmental education curriculum and is also involved in a class project using these resource sites.

Several factors have led to the success of their program. One of them is that expectations are communicated to teachers. When teachers are hired at the school, they become part of a commitment to teaching environmental education. Inservice programs are also provided for teachers to keep informed of nationally available programs. Local and regional sources are involved to help educate these students. The United States Forest service, 4-H, the Soil Conservation Service, and the local county museum are some of the organizations that make this program complete.

The purchase of resources that are integrated with the environmental education curriculum has also helped
to lead to the school's success. Their library has a wide selection of nature books. Additionally, an inventory of material concerning the environment is stored on a computerized data base to make it easy to locate information.

Not every school can become as involved and effectively integrated; however, all schools can learn to incorporate environmental education into their daily routines by more than just an occasional mention of a particular issue. This school surely provides a prime model.

**Nature Trails**

A nature trail will be able to give students outdoor experiences that will help them develop an awareness and appreciation of nature. Children will begin to understand their relationship to other living things and how they play such a crucial role in keeping the ecological system alive (Miller, 1972).

Much of the student's work is done sitting at a desk in a room enclosed by four walls. With a nature trail, learning can take place out-of-doors with lots of mobility. Children get to move along from station to station as they are learning. Tasks at each station may build upon one another, or a new skill or piece of knowledge can be learned each time.
Nature Trails in Use

A school in Tenants Harbor, Maine, planned and designed their own nature trail and have found it to be very successful. This fourth grade class' goal was to take the classroom outdoors. The process of developing the site was to become as important for the students as the goal of outdoor learning (Smith, 1984).

When the teacher first introduced his idea to the faculty, they were all very interested and thought of many different ways they could use the trail. Community members showed their support by becoming part of a committee that made suggestions on how to develop and use the nature trail.

The children put together a large wall map of the school property and boundaries. Then they set out in groups to tour the site and find the most interesting areas to become part of the trail. This map was handed to the board for approval and a ten-station nature trail was underway. The names of the stations chosen are as follows: 1) Granite boulders; 2) Red Maples; 3) White Pines; 4) Hermit's Hut; 5) Garden Site; 6) Meadow; 7) Marsh; 8) Stream; 9) Abandoned Road; and 10) Blowdowns.

The next step was to go ahead and clear the trail and put up trail markers. Coffee can lids painted with blue enamel were used and were tacked to the trees.
This method will not damage or deface the tree and can easily be changed at a later date. Tools were borrowed from a local landscaper and used under supervision only. Students were able to learn cooperation, safety, and what minimal impact to the environment means.

Learning that takes place on this trail focuses on the environment but covers many academic areas. The art teacher brings her students out to sketch, while the resource teacher takes the children for walks to help inspire them to write stories. The trail will really never be finished, and new ideas will always come to mind for improvement or new learning areas. Its main purpose is to be used as a tool for learning about the environment.

A school located in San Bernardino County, California, also uses a nature trail for educational purposes. The trail is located off-campus and is used by fifth and sixth grade students. Small groups of students are taken to the trail three times a week and are instructed by the environmental resource teacher and a volunteer from the local county museum.

The study of plant and animal life, geology, and monitoring the flow of a stream are all activity-oriented lessons related to an ecological concept that may take place on a visit to the trail. Students are
also involved in maintaining the trail, developing teaching sites, and labeling plants.

With students being able to visit this nature trail three times a week over an extended period of time, it is hoped that they will develop the understanding and attitudes necessary to promote personal adoption of an environmental ethic (Overbey, Stoner, & Gilbert, 1990).

By using a nature trail for a learning place, a child's experiences with the environment can become very real. When children see the interrelatedness of all subject areas to the environment, they will come to understand how each person's commitment to a better world is so vitally important.
PROJECT GOALS AND OBJECTIVES

The goal of this project was to show how environmental education could successfully be integrated into the elementary school curriculum, particularly the third grade. This integration was to take place through a non-science approach, focusing on the academic areas of math, language arts, and the fine arts. The activities designed for these disciplines would be taught on a nature trail which was planned and developed by the students themselves.
PROJECT DESIGN

The design of this proposed project is in the form of a booklet containing activities for use in the environment, particularly on a nature trail. The activities were planned for students in the third grade.

The lessons included focus on the academic areas of math, language arts, and the fine arts. Due to the fact that many educators feel they do not have a strong science background and that most environmental education materials published today are centered around science, this project shows how environmental concepts can be taught through other subject areas. Instructions are provided on how to design and construct a nature trail.

Each lesson includes a list of materials, an estimate of the length of time the lesson will take, and what station(s) on the nature trail are to be used. Each academic area includes five lessons to choose from. The skills taught coincide with the curriculum guide for third grade at a school in San Bernardino County for math, language arts, and the fine arts.

At the end of each of the three sections, a matrix of selected goals from the curriculum guide is given to
allow teachers to see just what the lesson has covered. The lessons included are focused on the environment of a rural mountain community; however, the booklet could be used at another site if appropriate adjustments are made.
STATEMENT OF LIMITATIONS

This project is characterized by the following limitations:

1. Its application is limited to students in the third grade.
2. Teacher willingness to use the activities.
3. Insufficient field testing of activities.
4. Available land and desire to complete a nature trail.
REFERENCES


THE PROJECT
INTRODUCTION

This unit has been designed to assist the third grade teacher in integrating environmental education into the curriculum through the use of a nature trail. Instructions are included on how to plan and design a trail for your particular site.

The unit is divided into three sections: math, language arts, and the fine arts, with each section including five lessons. Each lesson includes goals and objectives, materials needed, time required, and station(s) to use on the nature trail. After each goal statement, a page number is included which reflects what page that particular goal is located on in the curriculum guidelines for the third grade.

The lessons are easy to follow and should provide fun, hands-on enjoyment for all to better learn about their environment.
PLANNING AND DESIGNING A NATURE TRAIL

Clearly defined goals and objective must be planned before the start of a trail begins. This will help to stay on target for what is to be accomplished. The environmental setting in which the trail is to be constructed will determine much of what will be taught.

If a topic or theme for the trail is The Geology Trail, then rocks, minerals, and landforms must be present. Many other themes are possible, such as The Bird's Nest Trail, The Texture Trail, or The Ecology Trail, depending upon the landscape and the trail's educational purpose.

A nature trail should include three important elements: 1) a series of objects, sites, or stations; 2) a means to inform users how to get from one station to another in the correct sequence; and 3) an interpretive tool, such as a guidebook or tape, which provides needed information which encourages users to perform certain tasks (Swan, 1987).

In addition, location, length, and type of trail are all important factors in planning a nature trail. The location of the trail, whether on school property or another site, should contain varied features and points of interest. Careful consideration must also be given to the effect it will have on the area; the least amount of impact to the environment must be first
priority. The trail should not be near school ground activity or playing fields, so the least amount of disturbance is possible.

Special permission must be granted to use the land if the nature trail is to be located off of school property. Students and volunteers should carefully check the land over to determine the best place to start the trail and where to locate each station. A map of the area should be made so that children can prepare a self-guiding booklet when the trail is ready to open.

The length of the trail depends upon the area of land that is available and the population that will be using it. In general, the basic trail should not be more than one-half mile (Robinson & Wolfson, 1980). There can be one basic trail, such as an oval, figure eight, or a winding path with a separate entrance and exit. The main trail may have connecting loops or spurs as specialty trails. Six to eight stations are sufficient for primary age students and longer trails can be made with activities that are short and simple.

When deciding on the path the trail will take, avoid having to cut down any large trees. The path only needs to be wide enough for single file use. A narrow winding path is more interesting than a straight line path.
Special stopping places need to be provided for demonstrations and to allow the children to study an area or perform a certain task. Each station should include as many doing activities as possible. Children should smell, touch, taste, examine, and measure. Recording of data can also be included.

The making of a nature trail should be a cooperative effort by the teacher, students, and any outside help who can offer assistance. Tools will need to be borrowed from parents or local landscapers. Pruners, spades, rakes, stakes, saws, axes, and picks are some of the most important tools that all students must be taught how to use correctly and safely.

The most effective trail aid is the informed human guide. Too much written material at each station will lose a child's interest. Instruction leaflets, activity cards, and trail markers are the most common aids for a trail. Trail flags, leading ropes, labeled stakes, and information boards can also be used to get information across (Mason, 1982).

Trail maintenance is an integral part of keeping the trail in safe operating condition. Since children are involved in the planning and construction of a trail, they should have a vested interest in keeping it maintained. Children should enter and exit the trail without leaving anything behind. It should look as
though no one was there. The path is the only place to put a footstep; this helps to have minimal impact on the environment. No littering is allowed. Different groups of students or classes can be assigned a time to perform certain maintenance tasks to keep the trail in perfect shape all year long.

A nature trail can be planned and constructed by one class, but it should be an area that the whole school can use. The trail is never really finished. New learning areas can always be added or changed, depending upon what a class is studying, what season it is, or what nature is revealing at the time.
ENVIRONMENTAL EDUCATION PROGRAM ASSESSMENT SURVEY

1. Have you found the nature trail to be a useful tool in teaching about the environment?
   ___ Yes  ___ No

2. How often do you use the nature trail?
   ___ once a week  ___ a couple of times a year
   ___ once a month  ___ other ______________________

3. Are the lessons in this program easily integrated into your daily teaching plans?
   ___ Yes  ___ No

4. From what academic areas have you tried lessons?
   ___ Math  ___ Language Arts  ___ Fine Arts

5. Have you tried some of your own teaching about the environment on the nature trail?
   ___ Yes  ___ No

6. Do you feel the integration of environmental education into all subject areas of the curriculum is the best means of learning about the environment?
   ___ Yes  ___ No

7. Do you think the students have learned about the environment after using this program?
   ___ Yes  ___ No

8. Would you like to see this program continue?
   ___ Yes  ___ No

Please add any suggestions or comments you may have.
REFERENCES


MATH SECTION
LESSON ONE -- HOW OLD ARE YOU?

Goals
Students will solve problems using basic addition and subtraction facts. Add two-digit and three-digit numbers, with or without regrouping. Subtract two, three, and four-digit numbers, with or without regrouping (Bear Valley, 1989, p.16).

Objective 1
Students will count rings on a tree stump to determine its age, what year it was planted, and the good and poor growing years.

Objective 2
Students will learn about the importance of trees in our environment by listening to a story called Discovering Trees.

Materials

Time Required
A 90 - minute time slot.

Station(s)
To be determined.
Procedure

1. Students will bring pencils, paper, and their clipboards to the nature trial.
2. Students will gather around the tree stump to listen to a short story about the importance of trees. A short discussion will follow.
3. Pre-selected groups of six will come up one at a time to count the rings on the stump.
4. When all have finished, a consensus on the number of rings will be taken.
5. Students will compute several math problems regarding the rings on the stump.
6. All answers will be discussed together and corrected.

Evaluation

The teacher will know the objectives have been met as he or she watches the students work the problems out, and through class discussion concerning the importance of trees.
A follow-up activity will be to complete the enclosed booklet on Johnny Appleseed.
Happy Birthday, Johnny Appleseed
September 26, 1774

Assignments: Color the apple when the assignment is finished.

Seatwork: List all the foods you can think of that have apples in them.

Reading: After carefully listening to a short story about Johnny Appleseed, write a brief biography about him.

“A biography is a true story about someone’s life.”

Art/Language: Draw a big apple. Outline your apple with words that describe apples. Color your apple.

Penmanship: In your best printing copy the recipe for homemade applesauce.

(Parks, 1992).
list all the foods you can think of that have apples in them...

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12. 
13. 
14. 

In your best printing copy the recipe for:

HOMEMADE APPLESAUCE

(Parks, 1992).
(Parks, 1992).
Homemade Applesauce

medium apples (Johnathan or Winesap)
a cup sugar
inommon to taste

1. Wash, pare, quarter, and core apples.
1. Put 1 inch of water in a pan.
1. Put apples in and bring to a boil.
1. Cover and simmer until tender.
1. Sweeten with sugar, and bring back to boil
1. Press through a sieve or colander.
1. Season with cinnamon. Serve warm or cold.

(Parks, 1992).
Lesson Two — Trees and Shrubs of Southern California Mountains

Goal
Students will classify and sort objects, using one or more attributes by observing relationships and making generalizations (Bear Valley, 1989, p. 18).

Objective 1
Students will learn about the flora of the southern California mountains by observing trees and shrubs on the nature trail over a ten-month period.

Objective 2
Students will complete a chart providing descriptions of the leaves, bark, branching, flowers, and buds of the trees and shrubs.

Objective 3
Upon completion of the chart, students will determine what species they have been observing, with the help of a forest ranger and guide books.

Objective 4
Generalizations will be formed by students according to when changes occur in the trees' and shrubs' growth patterns.
Materials

Tree and shrub chart, pencils, clipboards, guidebooks, construction paper, and crayons.

Time required

During a ten-month period, the students will need two 50-minute periods per season to complete their charts.

Station(s)

Groups will be assigned to different stations along the trail to gather their data.

Procedure

1. Students will be given clipboards and charts to take to the nature trail.

2. Directions for completing the chart will be given beforehand and any questions will be answered.

3. Students will work in groups of two and will be assigned to certain stations along the trail.

4. Each student will be required to describe three different trees or shrubs from their area.

5. Each student will make a folder using construction paper to house their charts. These charts will track their activities throughout the year.
Evaluation

Each time the students work on this activity, they will be filling in a new chart and then comparing it with the previous ones. When this activity has passed through two seasons (four charts), the students will begin to formulate ideas as to what they have been observing by using guidebooks. As a culminating activity a local ranger will meet with the teacher and students on the trail to determine if the students' observations were correct.
<table>
<thead>
<tr>
<th>Name</th>
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<th>Branching</th>
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</table>
LESSON THREE -- ANIMAL TRACKING

Goal
Students will use standard units to measure length (inch, foot, yard). Use metric units to measure length (cm, m, km). (Bear Valley, 1989, p. 18).

Objective 1
Students will learn through a class discussion about the animals that live in the forest of the southern California mountains.

Objective 2
Students will understand the meaning of habitat and discuss where animal tracks are most likely to be found.

Objective 3
Students will learn about the art of animal tracking by watching a side show and through watching a demonstration on how to preserve the animal track.

Objective 4
Students will reinforce their skills on measurement by finding tracks on the nature trail and calculating the length, width, and distance apart of each track.
Objective 5

Using a footprint chart and their common knowledge, students will determine what animal they have tracked down.

Materials

Animal tracking slide show "Tracks and Tracking: A How To Guide," pencils, paper, clipboards, metric and standard rulers, plaster of Paris, water, nine ten-pound cans with plastic lids, oaktag cut into strips four cm wide or 1.5 inches, and paper clips.

Time Required

A week-long activity.

Monday - Use metric and standard rulers to practice measuring in inches, feet, yards, cm, m, and km. (40 min.).

Tuesday - Discuss animals of the forest and their habitats (40 min.).

Wednesday - Watch an animal tracking slide show and demonstration on how to preserve a track (60 min.).

Thursday - Explore the nature trail for tracks and take and record measurements (90 min.).

Friday - Return to nature trail and make casts of tracks (90 min.).
Station(s)

The entire nature trail will be used.

Procedure

1. Familiarize students with the standard and metric rulers and practice measuring around the room.

2. Hold a class discussion about the animals that live in the southern California mountains and reinforce the concept of habitat.

3. Watch a slide show about animal tracking and demonstrate how to preserve a track.

4. Set out on the nature trail looking carefully for animal tracks and take measurements of the length, width, and distance between tracks.

5. Record the number of toes on the fore and hind feet, type of feet (hoofed, toed, clawed, padded), direction animal was traveling, and any other signs of the animal.

6. Check guidebook or chart to clarify the type of track.

7. Make a plaster cast of a selected track, following enclosed directions.
8. Display tracks around the room and allow students to take them home.

Evaluation

Students will be evaluated on their cooperation, measuring skills, and their ability to follow directions. This week-long activity can be very exciting, but patience is needed to find a clean track. This activity will be easiest during spring, summer, and fall when the ground is still soft.
WHO GOESTHERE?

COTTONTAIL RABBIT

BIRD

(varying sizes)

SQUIRREL

MOUSE

(track tail drag)

SKUNK

RACCOON

FOX

(track almost a straight line)

OPOSSUM

(varying sizes)

DOG

(varying sizes)

DEER

3’

(Swan, 1987).
PRESERVING THE TRACKS (PLASTER CASTING)

A variety of ways for preserving the tracks for later follow-up study are available and include sketching, photographing, and replica casting. The following technique has worked well for making plaster casts of tracks.

**Equipment** (for group of 8 or 10)

- Three cans (#10 size) with plastic lids.
- Construction paper or file folders cut into strips about 4 centimeters (1.5 inches) wide (for making collars).
- Paper clips
- Plaster of Paris and water

**Procedure**

1. Select the track you will "cast" and remove any loose materials that might have fallen into it. Position a strip of the construction paper around it to form a collar, making sure it is tight to the ground so plaster will not seep out.

2. Mix enough plaster for the number of tracks to be cast. Pour some plaster into one of the cans, add water, and stir until the mixture is the consistency of pancake batter.
3. Pour carefully into the track to be cast. Some forms of plaster begin to set within a few minutes, so do not dawdle.

4. Before the plaster hardens, shape a paper clip to serve as a hanging hook, and secure it into the plaster.

5. After the plaster is hardened (1/2 to 3 hours), carefully remove the collar. Gently clean off the cast with an old brush.

6. Mount the cast to a backing board to make an attractive decoration.

Other Possibilities or Tips

1. Casts of leaves and flowers may be painted with poster paints or oil paints.

2. Talcum powder sprinkled on the track will keep the cast from retaining sand or mud.

3. Salt may be added to the mixture to hasten setting. Vinegar slows down the setting. Dental plaster, although expensive, sets very quickly.
LESSON FOUR — DESIGN YOUR OWN TREE FARM

Goals
Students will recall basic multiplication facts through nines (Bear Valley, 1989, p. 16). Find perimeters and areas of two-dimensional shapes and use standard units to measure length (inch, foot, yard) (Bear Valley, 1989, p. 17). Students will also interpret word problems by using role playing, pictures, and models (Bear Valley, 1989, p. 18).

Objective 1
Students will learn about the trees native to the local forest, using tree charts, guide books, and by walking on the nature trail.

Objective 2
Students will measure a 20' x 20' area on the nature trail for their mini tree farm to be planted.

Objective 3
Students will calculate the perimeter and area of the tree farm.

Objective 4
Students will estimate how many trees will be able to fit on the 20' x 20' area and make a multiplication problem for it.
Objective 5

Students will work cooperatively with a local forest ranger in planting the trees and learning what is needed to keep them alive.

Objective 6

Students will solve multiplication word problems using their tree farm as a model.

Materials

Tree chart, guidebooks, measuring tapes, stakes, hammers, pencils, paper, clipboards, shovels, small trees, netting to protect trees, and wildflowers for a border.

Time required

Four 50-minute periods.

1. Learning about native trees of a rural mountain community.
2. Measuring a 20' x 20' area. Putting up stakes and calculating perimeter and area.
3. Ranger and students plant trees and a wildflower border.
4. Complete multiplication word problems, using the tree farm.

Station(s)

An area of the trail with a flat, open piece of land.
Procedure

1. Hold a class discussion about the native trees of the area. Use tree chart and guidebooks.

2. Go to trail and have students measure a 20' x 20' area of land. Clear rocks and weeds and put up stakes.

3. Calculate perimeter and area and estimate how many trees will be able to be planted.

4. Plant trees with the guidance of a forest ranger.

5. Plant a border of wildflowers to set young trees off from anyone walking on them.

6. Students will work in groups of two and solve multiplication word problems using the tree farm as their model.

7. Go over answers together as a group.

Evaluation

The goals and objectives will be met as the students correctly measure the plot of land, calculate the perimeter and area, and solve word problems.

The tree farm should be observed at regular intervals to note changes in the trees' growth. These growth changes should then be put into charts and graphs.
LESSON FIVE — SNOW MELT AND AVALANCHE SAFETY

Goals

Students will create and interpret concrete, pictorial, and symbolic graphs. Students will predict outcomes and carry out simple activities involving probability (Bear Valley, 1989, p. 18).

Objective 1

Students will work cooperatively in groups of ten and place colored paper on the snow where each piece will receive equal amounts of sun.

Objective 2

Students will predict which color will melt the most, down to the least, and explain why.

Objective 3

Students will measure and record how deeply each piece of paper has melted into the snow at two different intervals during the day.

Objective 4

Each group will then make a bar graph representing their information.

Objective 5

Students will learn the value of color and how it plays a role in the snow.

Objective 6

Students will learn about avalanche safety by watching the film "In Winter's Domain."
Materials
Colored construction paper, pencils, snow melt chart, clipboards, rulers, and the avalanche film "In Winter's Domain."

Time required
Three 30-minute periods to place the paper in the snow and record the proper measurements. A 40-minute period to watch the avalanche video.

Station(s)
Open areas where the sun hits the most.

Procedure
1. Students will work in groups of two and each get three pieces of colored construction paper.
2. Students will place their paper on the ground in a sunny spot and be sure the paper is weighted down on the sides.
3. The class will return to the trail in two hours and observe, measure, and record how much the paper has melted into the snow.
4. Wait another two hours and repeat step 3.
5. Each group will go over their results and put their information into a bar graph.
6. Generalizations will be made according to the class' results and the role color plays in the outdoors will be discussed.
7. The idea of snow melt will be tied into avalanche safety and a film called "In Winter's Domain" will be watched.

8. A discussion will follow regarding hiking in the mountains during the winter and what to be aware of in the snow.

**Evaluation**

Students will be evaluated on their ability to measure and interpret results. Their graphs will also be a factor to see if they were able to transfer their information correctly. An understanding of avalanche safety will also be determined through class discussion.
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<th>BLUE</th>
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</table>
LESSON ONE -- SELF-GUIDING TRAIL BOOKLET

Goals
The students will use basic spelling rules and patterns. Proofread own and peer work for proper capitalization, punctuation, spelling errors, incomplete sentences, and proper handwriting form (Bear Valley, 1989, p. 15).

Objective 1
The class will work in small groups to prepare a given section of a self-guiding trail booklet for the nature trail.

Objective 2
The students will proofread each others' work and make revisions for the final copy.

Objective 3
Teacher will double check for the final copy.

Objective 4
The trail booklet will go to print.

Materials
Pencils, paper, dictionaries, map of nature trail.

Time required
A week-long activity, with 50-minute sessions each day.

Stations(s)
All stations will be written about.
Procedure

1. Once the nature trail's stations have been clearly marked out, the class will be put into groups of three and given a particular station to describe.

2. Each station will be described in a paragraph or two with a small handdrawn picture of each station.

3. Each group will exchange their work with another for peer editing.

4. Revisions will be made and the teacher will make a final check.

5. The class will vote on the printing style of the booklet (print, color of paper, fold of booklet).

6. Send the booklet off to be printed.

Evaluation

The goals and objectives will be met as the students successfully complete their section of the self-guiding trail booklet. The students will gain valuable writing experience and will be proud to have available a booklet that they themselves wrote for those who use the trail.
LESSON TWO -- POETRY COLLECTIONS BOOK

Goals

The students will recognize types of literature: biography, fable, folk or fairy tale, play, poem, and fantasy. Recite excerpts from prose and poetry (Bear Valley, 1989, p. 14). Use basic spelling rules and patterns (Bear Valley, 1989, p. 15).

Objective 1

Students will become familiar with poetry techniques from poetry books and class discussions.

Objective 2

Students will comprise an outdoor poetry collection book from writings on the nature trail.

Objective 3

Students will recite their favorite poem from the poetry collection book to the class.

Materials

Poetry handouts, blackboard, chalk, paper, pencils, clipboards.

Time required

One 30-minute class period to describe the poetry style to be used for the day and to check for student understanding; and a 50-minute period to
go to the nature trail and write on a particular topic involving the environment.

Station(s)
This will depend upon the particular writing assignment as to where the children need to be.

Procedure
1. A particular poetry style will be taught and discussed in class (haiku, cinquain, free verse, concrete poetry).
2. Samples of the particular poetry style will be handed out and a check for understanding will be made.
3. Students will be given a particular topic to write about concerning the environment that has previously been discussed.
4. Students will gather paper, pencils, and clipboards to bring to the nature trail to do their writing.
5. Students will begin their assignments individually.
6. Poems will be proofread, then handed in before final copy is made.
7. Students will then write their final copy for their poetry collection books.
Evaluation

The goals and objectives will be met as the students complete their poems in final form and they become a part of their poetry collection books. Topics from animals to pollution can be used to write about.
Cinquain
It’s poetry
Written in syllables
Two, four, six, eight, two — on five lines.
Write on!

Cinquain is a fun kind of pattern poem. It can be written about anything.

Tigers
Worst of the Beasts
Creep low in the tall grass
Cut down the very old or young
Big cats

by José

My pups
Playful fellows
Chewing my father’s shoes
And all they get from me is love
Young mutts

by Danny

(McDonald, 1979).
An unfinished thought
Capturing one small moment
Telling of nature.

Seashell holding sand:
I picked you up to polish,
But now you’re empty.
by Annette Schaefer Morrow

Walking on the beach
The water rushed to meet me
Trickling through my toes.
by Jane Redish

Haiku is a bit like a snapshot — a single moment captured forever
in words.
Try your hand at haiku. Just follow this form and write your
thoughts about nature.

haiku = 3 lines
of 17 syllables
(5 syllables)
(7 syllables)
(5 syllables)

(McDonald, 1979).
Your Brew Can Be Haiku

... An unfinished thought
Capturing one small moment
Telling of nature.

Summer has grown old;
Fall breaks the seal on winter;
Clouds fondle thunder.

by Annette Schaefer Morrow

On each budding tree
I see many springs dawning;
Small steps to summer.

by Annette Schaefer Morrow

Cook your own haiku brew to capture moments like these. Just follow this recipe and write your thoughts about nature.

haiku = 3 lines of 17 syllables
(5 syllables)
(7 syllables)
(5 syllables)

(McDonald, 1979).
Free Verse

It's FREE of rules
It's VERSE, another name for poetry
It's FREE VERSE . . . and here's a sample for you to taste:

people i meet
all
look so different
some are so long and skinny i can hardly see where they begin
and
end
and
others
are so short and fat
I wonder how they got where they are at.

by Peggy Horsburg.

Skiing

Skiing is like being part of a mountain.
On the early morning run before the crowds begin,
my skis make little blizzards
as they plough through untouched powder
to leave fresh tracks in the blue-white snow.
My body bends and turns to catch each bend and turn
the mountain takes; and I am the mountain and the mountain is me.

by Bobbi Katz
Free of Rhyme

Free verse is a type of poetry that has rhythm but doesn't rhyme or move to an even beat. It's just the best words in their best order to describe a moment, a feeling, or a special event.

DECEMBER
by Sanderson Vanderbilt

A little boy stood on the corner
And shoveled bits of dirty, soggy snow
Into the sewer —
With a jagged piece of tin.

He was helping spring come.

(McDonald, 1979).
SOME BIRD
The sparrow flew down to the sidewalk to stop my game of hand ball. I wonder if he heard my mother calling me to supper for the third time?

by Lee Bennett Hopkins

REAL STILL
saw the butterfly looking for a place to stop. I stood real still and let the butterfly rest.

by Jane Redish

(McDonald, 1979)
Some poets are artists too. They use a shape to give their poetry more meaning. This is called acrete poetry.

On our windowsill is a large fish bowl with a bottom pebble yellow.

**Goldfish**

by Stephen Andrews

What shape would you use for this poem? Think a moment! Then your hand at drawing poetry.

birds, free, fly and fly high, and why can't I go too?

low use the rest of this page to create your own acrete ideas.

(McDonald, 1979).
LESSON THREE — WEATHER JOURNAL

Goals

The students will draw conclusions, make comparisons, and draw inferences (Bear Valley, 1989, p. 15). Expand and enrich written vocabulary by using literature and materials from other disciplines, locate/interpret maps, charts, tables, schedules, graphs, and summarize information (Bear Valley, 1989, p. 16).

Objective 1

Students will become familiar with terms describing the weather.

Objective 2

Each student will set up a journal in a prescribed manner to record information.

Objective 3

Predictions, comparisons, and summaries will be made at certain intervals.

Materials

Composition books, pencils, clipboards, weather charts, weather instruments, newspaper.

Time required

Two 50-minute periods to learn weather terms and make weather forecasting instruments. A 50-minute
period is needed for each weather observation session and time to write in journals.

Station(s)

All stations will be used for observing the weather.

Procedure

1. Students will have previously been taught weather terms and have made their weather instruments.

2. Divide class into groups of four and have them decide who will record what information.

3. Give each student a weather chart to record their findings and report to a particular station on the trail.

4. Meet at amphitheatre for class comparison among the groups' findings.

5. Once five days of recording have been completed, have each student make comparisons between conditions and write their findings in their journals.

6. Attach weather chart to composition book once a five-day recording session is completed.

7. Have students make comparisons between weather conditions between different months of the year and among different seasons. Write these clearly in journals.
8. Have students hand in journals once a month to check for clarity and correctness of writing skills.

**Evaluation**

The goals and objectives will be met when students show an understanding of gathering weather information and on how well they can make comparisons and form generalizations and put these into clearly written paragraphs. Students can also compare findings with the newspaper. This is an ongoing activity and how much time is devoted to forecasting will be up to the individual teacher.

* Weather terms and directions for making weather instruments are enclosed.
WEATHER TERMS

1. Air pressure -- The air of the atmosphere presses against everything it surrounds; the effect of this is called air pressure.

2. Barometer -- An instrument used to measure air pressure.

3. Climate -- The pattern of weather conditions which exists in a place over a period of many years.

4. Clouds -- A visible mass of water vapor floating in the sky.
   Cirrus -- Thin, wispy clouds high in the sky on dry days.
   Cumulus -- Fluffy white clouds, usually in a blue sky.
   Cumulonimbus -- Thunderheads; overgrown cumulus with black bottoms.
   Nimbus -- Any cloud from which rain is falling.
   Stratus -- Layer of clouds, looks like lifted fog.
5. Cold front -- A region where cold air pushes against warm air. Rain usually occurs.

6. Precipitation -- Any form of moisture in the air (rain, snow, hail).

7. Rain gauge -- An instrument that measures how much rain has fallen.

8. Thermometer -- An instrument for measuring temperature.

9. Weather vane -- Shows the direction from which the wind is blowing.

10. Wind velocity -- Tells how many miles per hour the wind is blowing.
MAKING WEATHER INSTRUMENTS

Barometer:

clear narrow-mouthed bottle

cork or rubber stopper

piece of 1/4" glass tubing

1. Fill glass bottle 1/5 full of water.
2. Put glass tubing through cork or stopper that fits the mouth of the bottle tightly.
3. Put into bottle, tubing must reach down into water.
4. Mark the water level with a thin line of paint.
5. When the weather is fair, the water level will rise because of the pressure on it (high pressure).
6. If the weather is changing, the water level will fall and rain is ahead (low pressure).

Rain Gauge:

can - 8" in diameter

tall narrow bottle (olive bottle)

ruler

1. Pour water into can until it measures 1".
2. Funnel water from can into bottle, put a thin black line on the bottle, and write 1".
3. Empty the bottle.
4. Put water into can until it measures 1/2".
5. Funnel water from can into bottle and paint on bottle 1/2".
6. Repeat for 1/4".
7. Empty can and set in an open place where it will not fall or be flown over.
8. When it rains, funnel the water into the bottle and see how much rain actually fell.

Weather Vane:

pencil w/eraser  |  soda straw
feather         |  straight pin

1. Stick straight pin carefully through soda straw and into eraser of the pencil.
2. Stick feather into one end of the straw.
3. Make sure straw moves easily around pin.
4. Hold pencil up in the air and the open end of the straw will be pointed in the direction from which the wind is blowing.
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<thead>
<tr>
<th>Time of Day</th>
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<tr>
<td>Wind Direction</td>
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<tr>
<td>Barometric Pressure</td>
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<tr>
<td>Precipitation (how much; rain, snow)</td>
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<td>Cloud Type</td>
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<td>Weather Description</td>
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LESSON FOUR -- ENVIRONMENTAL ETHICS AND ROLE PLAY

Goals

Students will recognize feelings, actions, traits, motives of character. Listen to and participate in classroom discussions. Use correct grammar and usage in speaking (Bear Valley, 1989, p. 14).

Objective 1

Students will comprise a list of environmental ethics to be followed while on the nature trail and at all other times.

Objective 2

Students will role play different people and animals who use the forest, to gain a perspective on how others may value the environment.

Materials

Blackboard, chalk, poster paper, laminator.

Time required

Two 50-minute class periods. One to write out and discuss students' values while in the nature trail and the other to role play.

Station(s)

The role playing will be at the amphitheatre.

Procedure

1. Discuss the meaning of the term "Ethics" and ask the children what they feel is important about the
care and condition of the environment, particularly on the nature trail.

2. Write student responses on the board.

3. Have the students choose eight to ten statements that best describe their code of ethics for the nature trail.

4. Print these statements neatly on a piece of poster paper and laminate; hang up in the room.

5. Once at the amphitheatre, talk about how other people and animals may value the environment (hunters, builders, businessmen, rabbits, coyotes, bears, etc.)

6. Allow students to take turns and role play other characters to see the world through their eyes. Have other students try to guess who they are.

7. Discuss why certain people and animals may have a different code of ethics.

**Evaluation**

The goals and objectives will be met as the students complete their code of ethics and abide by it throughout the year. Role playing will also show their abilities to understand the feelings of other people and of animals.
Goals

Students will evaluate stories and give reasons for their evaluation. Relate content of a story or picture to own life and recognize types of literature -- biography, fable, folk or fairy tale, informational article, modern realistic fiction, play, poem, tall tale, and fantasy (Bear Valley, 1989, p. 14).

Objective 1

Students will sit quietly at the amphitheatre and listen to a story concerning a certain aspect about the environment.

Objective 2

Students will respond to the story as it relates to experiences of their own.

Objective 3

Students will become familiar with environmental issues.

Materials

Books or stories concerning the environment.

Time required

One 40-minute period at least once a week.

Station(s)

Amphitheatre.
Procedure

1. Students or teacher will choose a book or story to read concerning the environment.
2. Class will walk to the amphitheatre.
3. Teacher will read story and hold discussion.
4. Students will participate in discussion and possibly relate the topic to their own lives and how it affects them.

Evaluation

The goals and objectives will be met as the students participate in class discussions and relate the story to experiences of their own.
## Matrix of Selected Goals from Third Grade Language Arts Guidelines

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FINE ARTS
SECTION
LESSON ONE -- PINE CONE ART

Goals

Students will continue working with processes such as drawing, painting, constructing, printmaking, graphics, crafts, and computers (Bear Valley, 1989, p. 16). Demonstrate craftsmanship (Bear Valley, 1989, p.18).

Objective 1

Students will collect pine cones to make wreaths and bird feeders.

Objective 2

Students will follow directions to carefully complete the above projects.

Materials

Wreaths -- Four pine cones each and other natural objects, wooden ring, paper plate, paper bags, glue.

Bird Feeder -- One pine cone, peanut butter, sunflower seeds, string, butter knife.

Time required

Pine Cone Wreaths -- Two 50-minute periods.

Bird Feeders -- One 50-minute period.
Procedure -- Pine Cone Wreaths

1. Students will gather at amphitheatre to listen to instructions on how to complete their pine cone projects.
2. Each student will be given a paper bag to collect items from the nature trail.
3. Students will collect in groups of four for fifteen minutes.
4. Students will return to amphitheatre to begin their wreath.
5. Each student will be given a wooden ring, paper plate, and glue to begin.
6. Glue the wooden ring to the back of the paper plate to give it support to be hung up later.
7. Set the pine cone on the plate in the desired way first, then begin gluing. The smaller items may then be added.
8. Teacher and parent helpers will walk around and assist where needed.
9. Students will continue until time is up and proceed again on the next session.

Procedure -- Bird Feeders

1. Each student will get a pine cone and a piece of string.
2. Tie the string around the top of the pine cone so it is securely fastened.
3. Use a butter knife and neatly put peanut butter on the pine cone where the biggest openings are.

4. Take a handful of sunflower seeds and sprinkle them on the peanut butter and hang feeder from a limb.

5. Return to birdfeeder to refill at least once a month.

Evaluation

The goals and objectives will be met as the students successfully complete their pine cone projects. The wreaths can be a nice fall or winter decoration; they do not have to be made specifically for Christmas. The bird feeder activity is simple and rewarding. The students can sit quietly and watch as the birds come to snack!
LESSON TWO -- SERRANO INDIANS

Goals
Students will be encouraged to use language in expressive ways (Bear Valley, 1989, p. 17).
Students will also gain a deeper appreciation of their own aesthetic values and those of other people and cultures (Bear Valley, 1989, p.16).

Objective 1
Students will read local history books about the Serrano Indians.

Objective 2
Students will work together to create a play about the Serrano Indians and how they lived off of the land, to be performed at the amphitheatre.

Objective 3
Students will perform for the other third grades.

Materials
Big Bear history books, California Indians film, butcher paper, paint, Indian clothing and artifacts, map of Big Bear.

Time required
A two to three week slot is needed.

Station(s)
All stations on nature trail, amphitheatre for play.
Procedure

1. In class, students will read and discuss who the Serrano Indians were and where they came from.

2. Have the class pair up and locate on a map of Big Bear just where the Indians lived.

3. Watch a film called "The California Indians" and discuss the similarities and differences found between the Serranos and the other tribes of California.

4. Stress the importance the Serrano Indians felt in taking care of the land.

5. Go to the nature trail and locate the parts of the forest they used to survive.

6. Go to the amphitheatre and brainstorm with the class about different skits they could perform showing how the Serrano Indians lived off the land.

7. Break the class up into groups of four to six students and let them decide on what skit they would like to do.

8. Meet with each group to get a final decision and to offer them some suggestions and guidance.
9. Allow time for practice and for each group to make a small mural to be hung up at the amphitheatre.

10. Hold a dress rehearsal and arrange for the other third grades to see the show.

Evaluation

The goals and objectives will be met as the students perform their skit and show their understanding of the way the Serrano Indians once lived and by their participation in class discussions.
The Range of the Serrano in Southern California.
LESSON THREE — DESIGNING AND BUILDING AN AMPHITHEATRE

Goals
Students will demonstrate ability to apply design elements and principles, using skills in craftsmanship in such processes as weaving, constructing, stitchery, etc. (Bear Valley, 1989, p.16).

Objective 1
Students will plan and design an amphitheatre with the help of a builder.

Objective 2
Students will follow directions and take part in the actual construction.

Materials
Wood, saws, hammers, nails, rakes, sawhorses, garbage cans, plans.

Time required
To be determined by the builder and by his or her availability.

Station(s)
Open area on grounds of nature trail to accommodate 100 students.

Procedure
1. Students will meet with the builder on the trail to discuss the layout of the
amphitheatre. (A high school woodshop class could also be used).

2. The builder will then make a rough sketch of the amphitheatre.

3. The builder will return when the final plan is finished and discuss with the students what their jobs will be.

4. A lesson on equipment safety will be given before any construction begins.

5. Class will meet on nature trail once material is delivered and begin building.

6. Continue construction until completed, being sure to clean up all the debris each day.

7. Invite the principal out to see the finished product.

Evaluation

The goals and objectives will be met as the students successfully complete the amphitheatre under the direction of a builder.

* Parent helpers may also be useful during this project.
LESSON FOUR -- LISTEN AND PLAY ALONG

Goals
 Students will increase moving, listening, playing, and singing skills in order to express ideas, feelings, and values. Recognize musical expressions which imitate nature and sounds in the total environment (Bear Valley, 1989, p. 4).

Objective 1
 Students will lie quietly on their backs for ten minutes to listen to all the sounds they hear and discuss them with the class.

Objective 2
 Students will identify as many of nature's instruments as possible and try to make a few of their own.

Objective 3
 Students will learn songs from song sheets to be sung as a group.

Materials
 All materials are included with the directions for making the instruments.

Time required
 Three 40-minute class periods.
**Station(s)**

Any station on the trail for listening, amphitheatre for making instruments.

**Procedure**

1. Students will find a place to lie down in a given area and listen to all the sounds they hear during a ten-minute period.
2. Students will sit up and discuss all the different sounds they heard and what instruments could possibly imitate those sounds.
3. Students will go to the amphitheatre and listen as the teacher shows them the different instruments they are going to make.
4. Students will make a choice between four instruments to make. Do not allow everyone to pick the same one; a variety is needed.
5. Instructions to make the instruments are included.

**Evaluation**

The goals and objectives will be met as the students listen quietly to the sounds of nature and successfully complete an instrument. Upon completion of their instruments, the students should be given time to practice with them and
eventually put them to music. A few songs are included that the children will enjoy singing. * Parent help is advised for the making of the instruments.
MAKING MUSICAL INSTRUMENTS

Drums:

#10 cans from cafeteria
discarded drum heads (from music store)
lace
sandpaper

1. Open can at both ends and file edges to remove burrs.
2. Cut old drum heads to fit over the ends of the can with a two-inch overlap.
3. Punch holes through the edges of drum head and soak in water until pliable.
4. Place drum heads over ends of can and lace them together tightly.
5. Decorate drums.

Maracas:

cardboard (rolled into 6" cylinders)  papier mâché
burned-out light bulb  paint brushes
sandpaper  paint

1. Roll piece of cardboard into a cylinder about 6" long and glue it tightly around the screw end of a burned-out light bulb.
2. Cover bulb and handle with papier mâché and allow to dry thoroughly. Make sure covering is quite hard.
3. Once dry, tap the bulb so it will break and the pieces will make a silky sound.
4. Sand until smooth and paint in bright colors.
Rhythm Sticks:

- two 12" long sticks
- sandpaper
- shellack
- paint paint brushes

1. Find two straight sticks about 12" long and sand until smooth.
2. Paint in bright colors; a shellacked finish is best.

Stringed Instruments:

- cardboard
- twine
- scissors
- stapler
- tacks

1. Cut cardboard into shape of instrument wanted (guitar, harp, banjo, etc.).
2. Cut twine and wrap around cardboard and fasten tightly with staples or tacks.
3. Strum lightly and listen.
DECOMPOSITION RAP
(adapted from a choral reading by Steve Van Zandt)

THE CHORUS

Group I says: DE-COMP-osition, DE-COMP-osition (4
(times)
(and rolls arms around and around)

Group II says: GET DOWN, BREAK DOWN (4 times)
(and shakes hands high on "Get Down" and
low on "Break Down")

THE RAPPER

Is there waste? Well, I don't know
One thing dies to let another grow
The circle goes round each and every day
It's nature's rap and it's called decay

So come on people gather round, and make that
decomposition sound

(CHORUS)

Now there are many kinds of bugs
From worms to snails to banana slugs
But hey they're useful, that ain't no jive
They help to keep the soil alive

So come on people no time to nap, we've go to do
decomposition rap

(CHORUS)

Decomposition rap is a useful game
Trees drop their leaves like the falling rain
Bug chew them up, then spit them out
Making the soil for a new tree to sprout

So come on people ain't no imposition, the name of the
rap is decomposition

(Environmental Ed. Resource Center).
HAVE TO HAVE A HABITAT SONG

Adapted from a song by Bill Oliver

CHORUS

Habitat, habitat, have to have a habitat
Habitat, habitat, have to have a habitat
Habitat, habitat, have to have a habitat
We have to have a habitat to carry on

VERSES

The ocean is a habitat, a very special habitat
It's where the deepest water's at
It's where the biggest mammal's at
It's where all waters flow in fact
It keeps the atmosphere intact
The ocean is a habitat that we depend on

Chorus

The forest is a habitat, a very special habitat
It's where our friends the trees are at
Who make the oxygen in fact
And keep the soil from rolling back
It's where a bear can hang its hat
The forest is a habitat that we depend on

Chorus

The river is a habitat, a very special habitat
It's where the freshest water's at
So trout can have a life in fact
And where the salmon can come back
So help to keep them well intact
The river is a habitat that we depend on

Chorus

Well people are different than foxes and rabbits
They effect the whole world with their bad habits
Better to love it while we still have it or
Ra-ta-tat-tat our habitat's gone

Chorus

(Environmental Ed. Resource Center).
BANANA SLUG

Chorus:

\[c\quad f\]
Banana slugs, banana slugs
\[g\quad c\]
I like them they're useful
\[c\quad f\]
Banana slugs, banana slugs
\[g\quad c\]
They're part of the circle

\[c\]
Sticky as peanut butter
\[f\]
Shade of yellow
\[g\quad c\]
Looks like banana and oh so mellow
\[c\]
Good life givers
\[f\]
Livin' on the ground
\[g\quad c\]
Chewing on leaves when they fall down

On the side of their head
There's an all-purpose hole
They've got one foot
But plenty of soul
All day long they work and toil
Munching on duff to renew the soil

They make new soil to grow new trees
Trees make air for us to breathe
They're part of the circle
That lets things grow
So be kind to banana slugs
And let things flow
(And let them go)

If you're walking down a path
And you see a slug
You can bend down and hold it
You can give it a hug
You can pick it up; it won't bite or kick
You can show that you love it
Just give it a lick

(Environmental Ed. Resource Center).
GARDEN SONG

(c f c)
Inch by inch, row by row
(f c)
Gonna help this garden grow.
(f c)
Gonna mulch it deep below
(f g7 c)
Gonna make it fertile ground.
(c f c)
Inch by inch, row by row,
(f c G7 c)
Please bless these seeds I sow
(f c)
And warm them from below
(f g7 c)
'Til the rains come a tumblin' down.

Pullin' weeds and picking stones
We are made of dreams and bones.
Feel the need to grow our own
For the times are in our hands.
Grain for grain, sun and rain,
Find our way in nature's chain.
Tune our bodies and our brains
To the music of the land.

Plant your rows straight and long,
Temper them with prayer and song.
Mother Earth will make you strong
If you give her love and care.
Day by day, seed to sprout,
This is what life's all about,
From the inside pushing out
We keep growing everywhere.

(Environmental Ed. Resource Center).
LESLIE FIVE — LEARNING ABOUT COLOR

Goals

Students will name the primary colors, describe secondary colors and tell how they are made, and identify warm/cool colors.

Objective 1

Students will take walks on the nature trail during the four seasons to observe color changes.

Objective 2

Students will collect items found on the nature trail to create a color collage for each season.

Materials

Paper bags, colored paper (18 x 24), glue, crayons, scrap paper, materials from the forest.

Time required

Nine 50-minute periods. One for lecture and the rest for collecting and making collages for each season.

Station(s)

All stations for collecting materials, amphitheatre for talk about color and making collages.
Procedure

1. Students will learn that the primary colors are red, green, and blue, and that all other colors are secondary.

2. Explain that in order to make a secondary color you mix two of the three primary colors.

3. Give each student a small brown paper bag and have them draw a red, green, and blue circle at the top.

4. Tell them to choose two primary colors and mix them together to get a secondary color.

5. Let students report their findings and try a couple of combinations.

6. Ask the students what warm/cool colors are and where you may find them in the forest.

7. Explain that for each season they will be making a color collage; show example.

8. Allow students 10 to 15 minutes to begin collecting materials from nature to start their first color collage for the season.

9. It will depend upon the season whether the collage can be completed at the amphitheatre or not.
10. Students will choose a piece of colored construction paper, glue, and scissors and begin their collages.

11. Display collages around the room and compare the colors seen in the different seasons.

Evaluation

The goals and objectives will be met as the students show an understanding of primary and secondary colors and by the completion of a color collage for each season.

* "Hailstones and Halibut Bones" -- a good story about color.
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