The Whole Earthmobile Catalogue

By the staff of the Boston Children's Museum

ca. 1970

Yes, this is a play on *The Whole Earth Catalogue,* a popular alternative publication, 1968-72.
The original cover has been lost, but the here are the activity pages, followed by references and evaluations by Museum staff of their work in the communities.

MUSICAL INSTRUMENTS -- SANDPAPER BLOCKS

Materials Needed:	1 piece soft wood (i.e. pine) approx. 4"x6"x1 1/2" 1 piece sandpaper (med.-coarse grain) which will cover one surface of above block with 1/2" overlap on longest sides. 12 tumb tacks (or stapler and staples) 2 spools (knobs or screws) glue, hammer, saw, scissors, marking pen
Where to Obtain:	wood: lumber Yard: (Sterrit Lumber Co., 50 Albany, Cambridge, 547-0040 - Museum's co.) Sandpaper: hardware or discount store (yumont, Zayre) Thumb tacks: hardware or discount store spools: Museum store glue, hammer and saw: Woolworth's (adequate, inexpensive tools), hardware store scissors: art supply (Lambert Co. 920 Comm. 232-8551, Bernards 633 Centre St)
Possible Scrounge Sources:	wood: Sterrit Lumber Co. (see above) American Reproduction Co., 7 Sherman St. Charlestown, 242-1806, Museum's Annex, sandpaper: American Rep. Co. tools: see Earthmobile stored supplies
How to Make:	Cut the piece of wood in half so @ piece is approx. 4"x3"x1 1/2". Cut 2 pieces of sandpaper lg. enough so that @ piece covers one surface of the block with a 1/2" overlap on 2" sides. Cover one surface of @ block of wood with sandpaper, bringing it up over the sides and fastening it on with thumb tacks (staples). Glue one spool (knob/screw) to the plain side of @ block. Have each kid write his name or special design on the back of @ block.
Best Age Group:	5 - 7 years old
Approximate Time to Make:	20 minutes
Maximum Group:	with one workshop leader - 10 kids

Variations:

The wood and sandpaper can be pre-cut lowering the appropriate age group, shortening to 5-10 minutes the time consumed and increasing the maximum group to 20.

References:

Musical Instrument Recipe Book
Elementary Science Study of
Education Development Center,
Inc. 55 Chapel Street, Newton,
Mass. (available in Resource
Center)
Doug and Linda Lipman, 4
Newsome Park, Jamaica Plain,
524-6685
Jim Higgins, Summerthing,
227-3377 (home)
UNESCO Source Book for Science
Teaching, available in Resource
Center, (other instruments)

Commentary:

The musical instrument workshop was orginally conceived as the conclusion of a sensory awareness exploration of sound. It materialized as a 2-day, all staff workshop with only a small group of kids in Hyde Park having participated in the pre-instrument exploration. The first day was spent making the instruments. Each staff member "manned" a table and supervised the construction of a given instrument. (sandpaper blocks, rattles, rhythm sticks, and gongs were considered simple instruments and were made at one table). The second day Doug and Linda Lipman, two musicians, visited each of our sites with their guitar and banjo. At each site they led participatory songs and then separated for some small group interaction. (see enclosed tape).

MUSICAL INSTRUMENTS -
SANDPAPER BLOCKS

Commentary:

At our Beacon Hill site Jim Higgins, a local resident and part-time Summer-thing person, at our invitation, brought over his one man band during the latter part of the first session. His band, a wash board, an assortment of bells and horns and other percussion things worked very successfully as a means to get the kids to play their own instruments and deal with different rhythms. (See enclosed tape)
Although the workshop did not materialize as intended, it was very successful.

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It is desirable for the kids to do their own sawing but it is difficult for very young kids and without some assistance and several saws, time consuming; it is important to remember that most small children are not familiar with a saw and its use, so watch fingers and legs carefully.

MUSICAL INSTRUMENTS --- RHYTHM STICKS

Materials Needed:	assorted widths of doweling (approximately 1"/pair sticks) sandpaper, *assorted colors magic markers, coping saw (or cross cut saw) (*optional)
Where to Obtain:	doweling: Lumber Co., (Sterrit Lumber, 50 Albany, Cambridge, 547-0040) sandpaper: hardware or discount store (Yumont, Zayre) magic markers: art supply, Woolworth's, Museum store saws: Woolworth's (adequate, inexpensive tools), hardware or discount store (yumont, Zayre)
Possible Scounge Sources:	Sandpaper: American Reproduction Co., 7 Sherman Street, Charlestown, 242-1806 tools: see Earthmobile store supplies
How to Make:	Cut two pieces of doweling each approximately 6" long. Have each kid write his name on each stick, decorate if desired.
Best Age Group:]	4 - 6 years old
Approximate Time to Make:	10 minutes
Maximum Group:	with 1 workshop leader - 5 kids
Variations:	use wooden spoons or sticks from broom handles.
References:	See references for Musical Instruments Sandpaper Blocks

MUSICAL INSTRUMENTS ---- RATTLES

Materials Needed:	clean empty 1/2 pint milk containers assorted seeds *masking tape, *staples (*optional)
Where to Obtain:	seeds: grocery store
Possible Scrounge Sources:	1/2 pint milk containers: American Can Company, Needham 969-8000, Hood Milk Co., Dick Ferrini, public relations, 500 Rutherford, Charlestown, 242-0600, ext. 345
How to Make:	Place a small amount (less than a handful) of seeds in the milk carton. Seal the carton, with tape or staples if necessary.
Best Age Group:	3 - 6 years old
Approximate Time to Make:	5 minutes
Maximum Group:	25 kids
Variation:	any sealable container and any number of noise makers can be used: containers: paper cups with lids wooden match boxes, etc. contents: rice rocks salt sugar, etc.
References:	See references Musical Instruments-Sandpaper Blocks

MUSICAL INSTRUMENTS --- GONGS

Materials Needed:	flat metal disks (with a hole drilled near one side), medium weight string, scissors, striking implement (pencil, stick, dowel nail, etc.), *tempura paint, *magic markers, *pain brushes. (*optional)
Where to Obtain:	string: hardware or dime store, scissors: art supply (Bernards, 633 Centre Street) tempura paint, brushes, magic markers: Bernards and Lambert, 920 Comm. Avenue)
Possible Scrounge Sources:	flat metal disks: scrounge Museum. Soldiers Field Road 254-2747
How to Make:	If necessary clean the disk with a paper towel. Loop a 8" piece of string through the hole in the disk and tie the ends of the string together. Suspend the disk by the string and strike it with a hard implement (stick pencil, dowel, nail, etc.) If time permits the gongs can be nicely decorate with paint or magic markers. Have each child write his name or special design on the gong for identification.
Best Age Group:	2 - 8
Approximate Time to Make:	3 minutes
Maximum Group:	no limit
Variations:	See Musical Instruments: conduit chimes
Commentary:	The gongs were conceived as a use for some 8" metal disks we acquired at the scrounge museum. They were simple instruments which had a surprisingly nice sound.

MUSICAL INSTRUMENTS --- WOOD BLOCK TAMBOURINE

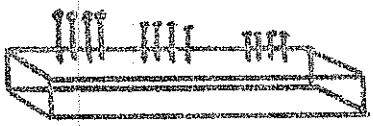
Materials Needed:	Block of wood approximately 3/4"x1 1/2"x6", 6-8 de-pinned 1 1/2" buttons (non twist top bottle caps with cork removed), 3-4 medium size nails with wide heads (i.e. 10c), hammer, cross cut saw, *paint, *magic markers (*optional)
Where to Obtain:	wood and nails: Sterrit Lumber Co. 50 Albany, Cambridge, 547-0040, or any Lumber company, or hardware store, tools: hardware or discount store (Woolworth's tools are adequate and inexpensive)
Possible Scrounge Sources:	Buttons: scrounge Museum, Soldiers Field Road, 254-2747 Bottle caps: large soda or tonic Manufacturer. Tools: see stored Earthmobile supplies Wood: Museum Annex, Sterrit Lumber Co.
How to Make:	Hammer a nail through the center of two buttons or bottle caps and partway into the wood block. Slide the buttons up and down and from side to side to nelarge the nail hole enought that the button will move freely when the wood is shaken. Use as many nails and caps as will fit on the block. Decorate with paint or magicmarkers if desired. Have each child write his name on his instrument.
Best Age Group:	7 - 10 years old
Approximate Time to Make:	20 minutes

Maximum Group: with several hammers - 10 kids

References: See references Musical Instruments-Sandpaper Blocks

Commentary: If circumstances permit it is desirable for each kid to cut off his own block of wood from a longer piece.

MUSICAL INSTRUMENTS — NAIL SCRAPER

Materials Needed:	block of wood approximately 2"x2"x8", 4 of each of 3 sizes of nails, 1 lg. nail hammer, cross cut saw, *paint, *magic markers (*optional)
Where to Obtain:	wood: Lumber Co. (Sterrit Lumber, 50 Albany, Cambridge, 547-0040) nail: hardware or lumber yard (Yumont, Sterrit) tools: hardware or discount store (Woolworth's tools are adequate and inexpensive).
Possible Scrounge Sources:	wood: Museum Annex, Sterrit Lumber Co. (see above) tools: see stored Earthmobile supplies.
How to Make:	 Hammer all the nails into the block of wood in a row, grading the nails by size and height. (see diagram) Decorate with paint or magic markers if desired. Have each child write his name on his instrument. To play the instrument run a large nail along the row of nails.
Best Age Group:	7 -10 years old
Approximate Time to Make:	20 minutes
Maximum Group:	10 kids
References:	See references Musical Instruments-Sandpaper Blocks
Commentary:	If circumstances permit, allow each child to saw off his own block of wood from a longer piece.

MUSICAL INSTRUMENTS — METAL CHIMES

Materials Needed:

two 10" pieces of 1/2" diameter electrical conduit, tubing, string, masking tape, pipe cutter, striking implement: stick pencil, dowel, etc.

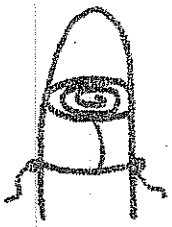
Where to Obtain:

conduit: hardware or electrical supply house
string and tape: hardware, discount or art supply store
pipe cutter: hardware store (Yumont)

Possible Scrounge Sources:

conduit: Museum supplies in Annex
pipe cutter: Museum tools in Annex

How to Make:



Cut the tubing into pieces, one each of the following lengths:

22 7/16"	18 1/4"	14 3/4"
21 1/4"	17 1/8"	13 3/4"
20 "	16 5/8"	13 7/16"
19 1/2"	15 5/8"	

To make loop for hanging the chimes, tie double knots in both ends of 8" pieces of string. Secure the string to the top of each tube with tape as shown. Hang the chimes at a convenient height.

Best Age Group:

11 or above

Approximate Time to Make:

30 minutes

Maximum Group:

5

Variations:

Other tuned pipe lengths:

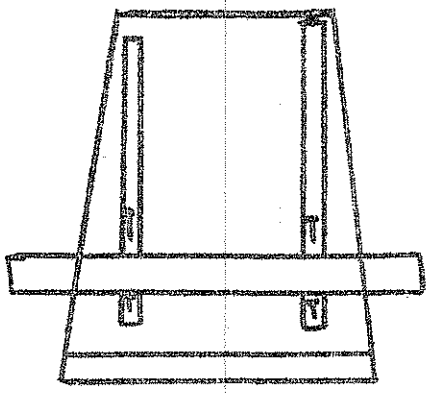
for 1/2" diameter pipe:

11 3/16"	9 1/8"	7 3/8"
10 3/4"	8 9/16"	6 7/8"
10 "	8 5/16"	6 23/32"
9 3/4"	7 3/16"	

for 7/8" diameter pipe:

13 11/16"	11 7/8"	9 7/8"
12 7/8"	11 3/8"	9 5/8"
12 3/8"	10 5/8"	

Variations:



To make a xylophone:
Use one plank or 2 strips of wood long enough to accomodate the number of pipes you wish to use with a 1" space between them. Cut 2 strips 1" wide each of foam rubber padding or insulation as long as the plank or boards . Lay the strips across the plank as shown. For each pipe drive four nails, two in each piece of foam rubber, into the wood as loose supports for the pipes. (see diagram) Insert the nails so the pipes are approximately 1" apart. Place the pipes between the support nails in size sequence.

References:

See reference Musical Instruments - Sandpaper Blocks

Commentary:

Precise cutting is necessary to make chimes that are well tuned. The pipe cutter is heavy and requires a fair amount of strength to use. Therefore this job is for older children or an adult. Untuned chimes have the same beautiful tone and are much less trouble.

MUSICAL INSTRUMENTS --- ONE STRING GUITAR

Materials Needed:	strip of wood about 2"x24"x3/4" 2 srew eyes 1 yard nylon fishline (squidding line is best) 2 popsicle sticks 1 large nail (or pliers) cross cut saw hammer *paint, *magic markers (*optional)
Where to Obtain:	Wood: Lumber Co. (Sterrit Lumber Co., 50 Albany, Cambridge 547-0040) screw eyes: hardware store (Yumont) fishline: sporting goods or discount store (Zayre) tools: hardware or discount store Woolworth's tools are adequate and inexpensive)
Possible Scrounge Sources:	wood: Sterrit Lumber Co. (see above) popsicle sticks: Workshop of Things tools: se Earthmobile stored supplies
How to Make:	Insert a screw eye near each end of the wood strip. (The large nail can be used to start the holes for the screw eyes.) About 1 1/2" from each end of the wood strip, saw a groove 1/4" deep across the strip for a popsicle stick. Insert the popsicle stikcs sideways into the grooves, and tie the string between the two screw eyes. Using the nail as a lever, tighten the string by turning one of the screw eyes. Play different notes by pressing on the string in different positions along the wood strip. Decorate with paint or magic markers if desired. Have each child write his name on instrument.
Best Age Group:	8 - 12 years old
Approximate Time to Make:	30 minutes

Maximum Group:	6
Variations:	See milk carton guitar recipe
References:	See references Musical Instruments - Sandpaper Blocks
Commentary:	If circumstances permit, it is desirable for each kid to cut his own strip of wood from a longer piece.

MUSICAL INSTRUMENTS --- MILK CARTON GUITAR

Materials Needed:

1 gallon size milk container - empty and clean,
strip of wood approximately 2"x30"x3/4",
3 yards nylon fishline ("squidding" line is best),
4 screw eyes, large nail, saw, hammer, utility knife,
*paint, * magic markers
(*optional)

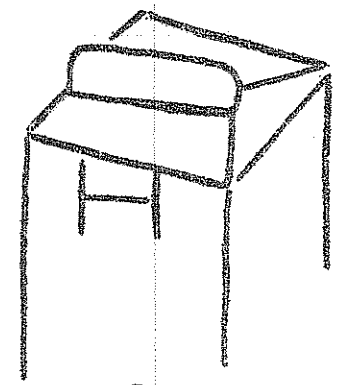
Where to Obtain:

wood: lumber co. (Sterrit Lumber Co.)
fishline: sporting goods or discount store (Zayre, Yumont),
tools: hardware or discount store
screw eyes: hardware or discount store

Possible Scrounge Sources:

milk cartons: Hood Milk Co., Dick Ferrini, public relations, 500 Rutherford, Charlestown, 242-0600 ext. 345,
wood: Sterrit Lumber Co.,
tools: see stored Earthmobile supplies

How to Make:



Cut an "H" shaped slot midway between the two sides of the milk carton. Make the slot exactly the size of the wood strip, so that the strip will fit tightly into the slot when the sides of the "H" are folded out. Make an identical slot on the opposite side of the carton.
Insert a screw eye for each string you want near one end of the wood strip. (Use a large nail to start the holes for the screw eyes). Then slide the strip through the milk carton, with the screw eyes on the same side as the peak of the milk carton. Insert the same number of screw eyes in the other end of the strip. Then tie fishline tightly between each pair of screw eyes.
The peak of the milk carton acts as a bridge. Where the fishline crosses the peak cut a small groove for each string.
Decorate if desired with paint or magic markers. Have each child write his name on instrument.

Best Age Group:	9 - 13 years old
Approximate Time to Make:	30 minutes
Maximum Group:	5
Variations:	Use plastic bleach bottle instead of milk carton. (see references)
References:	See references Musical Instruments - Sandpaper Blocks
Commentary:	If circumstances permit, allow each child to cut his own strip of wood from a longer piece.

Sensory Awareness

SENSORY AWARENESS --- SOUND #1

How to Make:	Experiment with your voice --- stretch it!
Best Age Group:	7 or above
Approximate Time to Make:	5 - 15 minutes
Maximum Group:	10
References:	"Fragments" Education Devel. Center, 55 Chapel, Newton, Mass. (available in R.C. "Essence Cards-Environmental Studies", American Geological Institute (available in R.C ... and a time to dance, BY Norma Canner (available in resource center)
Commentary:	This exercise and the ones following are intended to make kids aware of their bodies as sound makers.

SENSORY AWARENESS --- SOUND #2

How to Make:	Sit in a circle in a quiet closed space. Hum a sound and try to find it on your back with your hands.
Best Age Group:	7 or above
Approximate Time to Make:	3 minutes
Maximum Group:	10
References:	See references Sensory Awareness -Sound #1
Commentary:	See commentary Sensory Awareness - Sound #1

SENSORY AWARENESS --- SOUNDS #3

How to Make:	Choose a quiet place for this exercise. Have each child chooose a partner. Have everyone lie down and listen to their partner's heart beat. Switch and repeat. Then have everyone lie very still and try to hear their own heart beat. Get up and run, jump, skip, hop--- can you hear your heart now?
Best Age Group:	7 or above
Approximate Time to Make:	10 - 15 minutes
Maximum Group:	10
References:	See Sensory Awareness - Sound #1
Commentary:	See Sensory Awareness - Sound #1

SENSORY AWARENESS --- SOUNDS #4

How to Make:	See how many different sounds your hands/feed can make.
Best Age Group:	5 and above
Approximate Time to Make:	15 - 20 minutes
Maximum Group:	20
Variations:	See Sounds #5
References:	See Sensory Awareness-Sounds #1
Commentary:	See Sensory Awareness-Sounds #1

SENSORY AWARENESS --- SOUNDS #5

How to Make:	Tell a story with your hands/feet using volume, rhythm, and quality as your words.
Best Age Group:	7 or above
Approximate Time to Make:	15 minutes
References:	See Sensory Awareness-Sounds #1
Commentary:	See Sensory Awareness-Sounds #1

SENSORY AWARENESS — SOUNDS # 6

Materials Needed:	portable tape recorder, blank tape
Where to Obtain:	tape cassettes: Allied Radio, 730 Comm. Ave. 734-5855
Possible Scrounge Sources:	Resource Center
How to Make:	Go for a walk in an area familiar to all the kids, recording as you go neighborhood noises. Pair up and continue your walk with one person in every pair "blind". Keep recording. Switch. In a quiet closed space replay the tape and have the kids try to place themselves geographically by the sounds. It may help to turn out any lights and have everyone lie on the floor without touching anyone else, with eyes closed.
Best Age Group:	7 or above
Maximum Group:	10
Approximate Time to Make:	40 - 60 minutes
References:	See Sensory Awareness-Sounds #1
Commentary:	WATCH!! Remember you're removing kids from the site.

SENSORY AWARENESS --- SOUNDS #7

Materials Needed:	Portable tape recorder, series of pre-taped common sounds
Possible Scrounge Sources:	Resource Center
How to Make:	Have kids listen to a series of pre-taped sounds and guess what they are. Give hints for difficult ones. The tape I used contained the following sounds, listed in sound sequence and numbered by degree of difficulty. (1 being the easiest and 5 never guessed). washing dishes (5) busy telephone signal (1) wind chimes (1) flushing toilet (2) clock and alarm (1) gas flame igniting (5) cough (1) pencil scribbling (4) pencil sharpening (5) fan (3) door slamming (2)
Best Age Group:	7 or above
Approximate Time to Make:	30 - 40 minutes
Maximum Group:	15
References:	See Sensory Awareness-Sounds #1
Commentary:	Try to tape very common sound that are part of the background noise we block out.

VISUAL GAMES --- OPTICAL ILLUSIONS

Materials Needed:	oversize copies of optical illusions
How to Make:	Introduce the kids to their eyes, as seeing mechanisms which can be fooled. The illusions used are attached.
Best Age Group:	7 years old or above
Approximate Time to Make:	10 minutes
Maximum Group:	15
References:	Experiments in Optical Illusion, by Nelson Beeler and Franklin Branley Y53E available at Boston Public Library, Jamaica Plain Branch, Sedwick and South Streets
Commentary:	The kids did not find this very interesting.

VISUAL GAMES #1

Materials Needed:	pencil, paper
How to Make:	Appoint someone in the group to be secretary. Think of tactile qualities you can feel wity your eyes. List them and then go out and try to find them. Test your eyes with your hands. Can your eyes be fooled? A copy of the qualities we looked for is attached.
Best Age Group:	9 year old or older
Approximate Time to Make:	40 - 60 minutes
Maximum Group:	10
Variations:	See visual Games - #2
References:	"Fragments", Education Development Center, 55 Chapel, Newton, Mass., (available in the Resource Center) "Essence Cards - Environmental Studies", American Geological Institute, (available in the Resource Center)

VISUAL GAMES --- #2

Materials Needed:	paper, pencil, polaroid cameras and film
Possible Scrounge Sources:	cameras: Summerthing
How to Make:	Think of and list invisible things. Go out in the neighborhood and try to photograph some invisible things.
Best Age Group:	7 years or older
Approximate Time to Make:	40 - 60 minutes
Maximum Group:	7
Variations:	If the idea of photographing something invisible is too difficult, let the kids photograph tactile qualities they "feel" with their eyes. *see visual games #1

COLOR TRAYS

Materials Needed:	Visitor Center Color tray Discovery 1 set food coloring (red, blue, yellow) 4 plastic squeeze bottles with tops 6 eyedroppers 6 plastic trays paper towels newspaper or an oil cloth protective covering
Where to Obtain:	Visitor Center
How to Make:	Cover your working surface, a table, or the ground, with newspaper. Distribute the six plastic trays and fill half the holes in each tray with water. Fill one or two holes of each child's tray with a 4-1 solution (water and food coloring) of the primary color of his choice. Give each child an eyedropper and if necessary demonstrate how it works. Tell each child to stretch the color to its limits with the help of the water. It may be necessary to give more explicit directions to some children. When a child has fully explored one color give a second and later a third. Stretch it out----there is much to see. After he has fully explored the colors you have given him and the secondary and tertiary colors he has produced, give him a paper towel to design with. At this stage or before it may be necessary to freshen his colors, give him more water or empty his tray.
Best Age Group:	6 - 10 years old
Approximate Time to Make:	40 - 60 minutes
Maximum Group:	6
Commentary:	This discovery is an excellent primary exploration of color. It may move slowly at first, the kids unsure of what to do, but with more explicate directions for those who need guidance, by the second color they are usually fascinated.

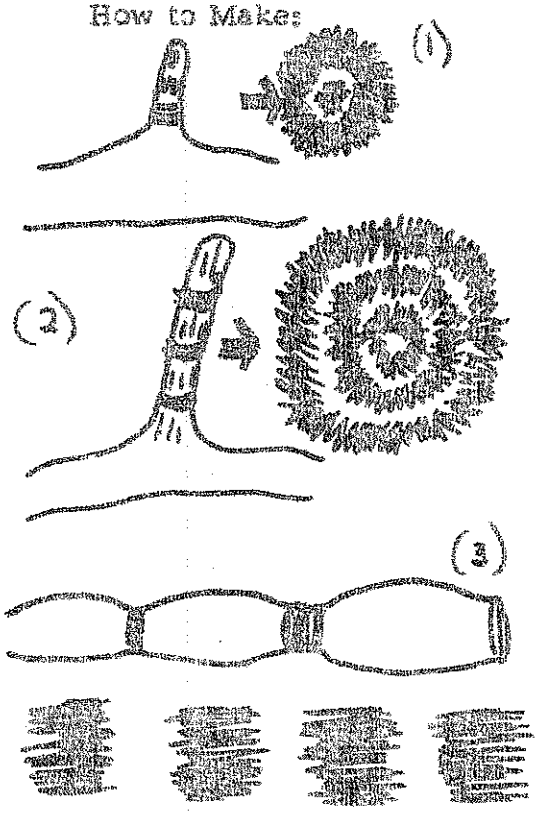
TIE DYE

Materials Needed: assorted colors of cold water dyes in large pastic or glass wide mouth jars, rubber bands, medium weight string, scissors, T-shirt, salt

Where to Obtain: dyes: Earth Guild, 149 Putnam, Cambridge, 547-6099
rubber bands and string: discount store or stationary store
scissors: Lambert Art Supply
T-shirts: department store or s discount store
salt: grocery store

Possible Scrounge Sources: dyes: see store Earthmobile supplies,
wide mouth glass jars: Sheraton Boston, Prudential Center, 267-4848
rubber bands: museum supplies

How to Make:



tie dye is a resist-dye process using string or rubber bands as the resist. There are two basic designs---rings and lines. To produce a ring pinch one thickness of the desired amount of cloth and very tightly tie it off with string or a rubber band at the place you want the ring, (see diagram).(1) Successive tied off bands produce a series of successively larger rings (see diagram).(2) Rings can be varied by using more or less cloth, more or less string (thickness), twisting the cloth (pattern), and placing random angled rubber bands between rings (pattern).
to produce lines accordion pleat the fabric in the direction you want the line to take. Keeping the pleats in order tie the cloth with string at the intervals you want the lines to appear (see diagram).(3)

How to Make:

When the cloth is tied in the design you desire, immerse it in a prepared dye solution. Before the day you intend to use the dyes, prepare them according to package directions or the following recipe:
2 teasppons dye
2 teaspoons salt
1 quart water
Dissolve the given proportions of die and salt in hot water. When dye has dissolved add one quart of cold water to dilute the dye. All dyes vary instrength so be sure to experiment with them before you use them with the kids. Dye small swatches of the type and color cloth you will be using as color examples for each dye. Remove the cloth from the dye when desired color is reached allowing for color intensity decrease when cloth is dry. Rinse the cloth in cold water until the rinse wate is clear. Hang up cloth until dry (usually 12-20 hours). When cloth is completely dry carefully cut ties and and remove. Iron fabric if desired, The initial laundering of each tie dyed article should be a cold water wash with detergent and 1/4 cup salt. To avoid irrate mother be sure to issue written laundering instructions to each kid.

Best Age Group: 7 years old and above

Approximate Time to Make: 30 - 60 minutes for preparing cloth

Maximum Group: 20

Variations: use several tie and dye progressions using different color dyes.

Natural Science

BIRDSEED GARDENS

Materials Needed:	6" paper plates, toilet paper, or paper towells, Birdseed or lentil seeds, fold-lock top plastic bags (sandwich size), water, *Crayons (*optional)
Where to Obtain:	paper plates, toilet paper, towels, plastic bags: grocery store birdseed: hardware store
How to Make:	Place towelling or toilet paper on plate, folded so that it fits. Dampen thoroughly with water. Place birdseed on top of towelling. Put plastic bag around paper plate, fold-locking the top (the adult will probably have to do this). Garden is now complete Child takes it home. Seed will start to germinate in 1-3 days, and will live for about two weeks without further attention. After that they may be transplanted.
Best Age Group:	3 - 6 years old
Approximate Time to Make:	5 minutes per garden
Maximum Group:	8 children per adult
Variations:	use egg cartons (the thick cardboard kind) instead of paper plates. Use other seeds; kidney beans, lima beans, etc. will sprout within 4-5 days.
References:	Play with Seeds, Millicent Selsam
Commentary:	Good chance for kids to talk about seeds especially seeds we eat. Kidney beans appear in baked beans; peanuts, walnuts etc, are seeds; corn, peas, lima beans as well. Sesame seeds show up on candy, roast pumpins seeds are a Halloween treat. Seeds can grow without food at first because food is stored up in the seed. Kids can take apart pre-soaked lima or kidney beans to see the embryo plant. Bir

BIRDS

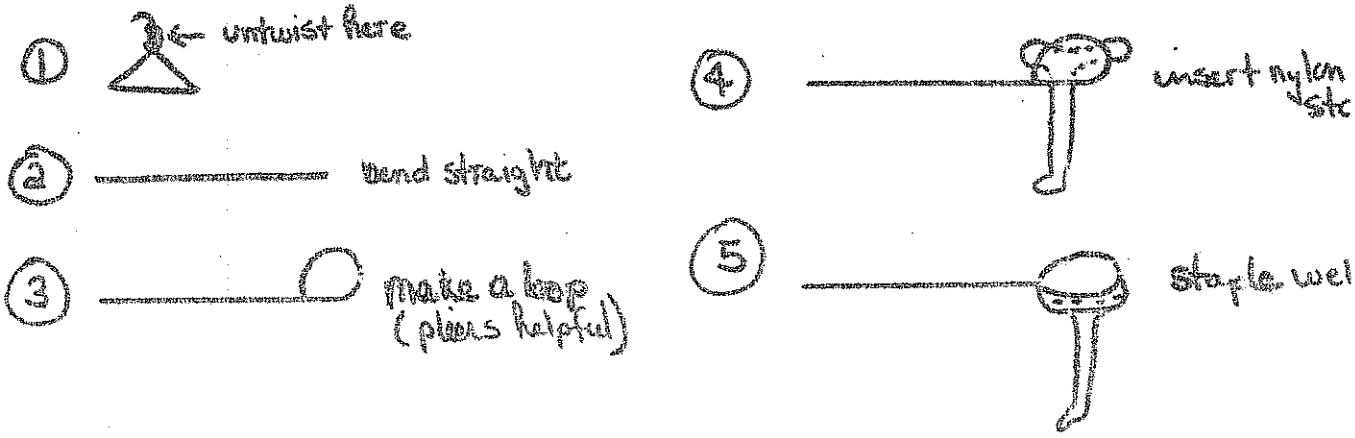
Materials Needed:	stuffed birds, birds' nests with eggs pictures (optional), live bird (optional but desirable), Guidebook to birds of North America
Where to Obtain:	"Nesting Birds" from the loan box from the Children's Museum. Borrowed stuffed specimens from the Collections: a herring gull, purple grackle, robin and blue jay. A pigeon and english sparrow would also have been desirable.
How to Make:	This activity did not "make" anything. I just sat around and talked with a small group of kids about birds in general and these specimens in particular. At the time I was hand-rearing a baby sparrow and I brought it along for the kids to feed. I told them about the different kinds of birds to be found in the city and they in turn told me of their various encounters with birds. However, the kids seemed mainly interested in the stuffed specimens-- how they were made, how old they were, etc. the first question kids asked almost invariably when confronted with a stuffed animal is "Is it real?" I told them that the animal was real but dead--a point which seems to confuse children.
Best Age Group:	6 - 11
Approximate Time to Make:	This activity can take as long as you like
Maximum Group:	8 per adult
Variations:	other materials are possible: a chicken skeleton or an assortment of feathers (ostrich, peacock, eider, etc.). One can play sorting games to match drawings of beaks, feet, and food.

Commentary:

This sort of activity is best for a small group of children who like to sit around and talk about things. Most of the time the adult will be answering so many questions about the materials that he won't be able to do much lecturing. The adult should know the rudiments of taxidermy since the kids tend to be very curious about this subject. The materials should be sturdy and not irreplaceable. In fact, defective stuffed animals are often best because that way youngsters can see how they were mounted--with wire, straw and plaster, newspaper, cloth, etc. The group of children for this activity was quite fluid, so it is advisable to have supplemental activities.

BUTTERFLY NETS

Materials Needed:	old stockings or pantyhose, wire coathangers, stapler or needle and thread, pair of pliers
Where to Obtain:	Dry-cleaning establishments will frequently give hangers to individuals stapler, pliers: hardware stores
How to Make:	Bend hanger with pliers after untwisting, into shape shown. Bring stocking up through center of hanger and fold over. Staple or sew together so that the stocking does not come off. Straighten the handle out. *diagram below.
Best Age Group:	7 - 11
Approximate Time to Make:	10 - 20 minutes per net
Maximum Group:	6 per adult
Commentary:	Sewing makes the net sturdier but it is difficult for younger children and repellant to boys. Staples have a tendency to fall out. These nets are very good for catching butterflies, bees, etc., provided the adult brings along jars to put the specimens in. In the Earthmobile program, the making of these nets was part of activities involving a a bug hunt, then the specimens were killed and examined under a Bausch and Lomb JSM-15 microscope.



KILLING JARS

Materials Needed:	glass jar with airtight top cotton, cloth, or paper towel carbona cleaning fluid
Where to Obtain:	carbona cleaning fluid: dime store
How to make:	Place cotton or cloth in bottom of jar; dampen with carbona. Re-apply carbona as needed.
Best Age Group:	To be made by an adult only
Approximate Time to Make:	5 minutes
Commentary:	for use in bug-hunts when dead specimens are desired. Carbona is toxic and the killing jar should be carried and used only by an adult. Specimens will usually die within 1-2 minutes.

ROCKS

Materials Needed:	hammer, piece of heavy cloth, water, *magnifier (*optional)
Where to Obtain:	hammer: hardware store cloth: textile store magnifier: school supply store
How to Make:	The best way to do this is to take kids on a "rock walk" of the neighborhood. On the way they can collect interesting or pretty rocks not much larger than the kid's hand. These can be washed with water to show dirt-hidden features, looked at with the magnifier, and then broken by pounding with the hammer--at this point the rock must be covered with cloth to prevent chips from flying into kids' eyes. Often a dull-looking rock will have lovely crystals inside. The adult leader can also point out local geological formation, different kinds of rocks, etc.
Best Age Group:	6 - 8
Approximate Time to Make:	30 - 60 minutes
Variations:	try making "soil" by pounding rocks to a powder. Will plants grow in it? How is it different/similar to garden soil? to beach sand?
References:	Zim and Shaffer, Rocks and Minerals
Commentary:	There should be enough hammers to go around or else kids will get bored. Have extra cloth for when some get tattered.

MICROSCOPES --- SSM-15

Materials Needed:	1 Bausch and Lomb SSM-15 microscope ($50.00 retail cost)
Where to Obtain:	available at Mr. Wizard's Science Center, 239 Washington Street, Wellesley, Mass., 235-2486
How to Make:	This activity is designed to acquaint young children with the microscope--it can take the form of a walk or a backyard exploration or indoor activity. The idea is to look at as many interesting things as are is easy to use and portable. Note--the stage may be snapped off if pushed down with the hand. Caution children to use the focusing knob to move the stage up and down. Children can start by looking at their own fingers, hair, and clothing. Rocks, dirt, and plants can be included. This microscope is also good to have along for a bughunt. It magnifies 15X. Young children may find it easier to use one eyepiece rather thean both.
Best Age Group:	5 - 10
Maximum Group:	5 per adult
Variations:	bring along other magnifiers if desired
References:	Richard Headstrom, Adventures with a Wand Lens
Commentary:	The SSM-15 is one of the best microscopes I have ever seen work with kids. It is sturdy, only needs one adjustment to focus, and can be used both inside and out. Objects up to 3/4" thick can be examined. It is a good instrument to have in the field for bughunting.

MICROSCOPE WORKSHOP

Materials Needed:

slides, plastic coverslips, water, eyedroppers, Bausch and Lomb ESM-100 microscopes, materials for mounting(new-paper, hair, feathers) prepared slides, lens paper

Where to Obtain:

slides and coverslips: Selective Educational Equipment, 3 Bridge Street, Newton, Mass., 02195
microscopes: Children's Museum

How to Make:

Workshop is designed to introduce children to microscopes. It is best to start off with prepared slides to give kids the hang of adjusting the mirror and focusing. First, have kids adjust mirror so a clear even white field shows through the microscope. Then give them a prepared slide (preferably one that has been stained-prepared transverse sections of plants are good for this purpose.) Move the slide around until a colored blur shows in the field, then adjust focus. (on ESM-100 this is accomplished by twisting the barrel up and down) Give the kids more slides, progressively more difficult. Then have them make their own slide with a bit of newspaper. First clean a slide with lens paper. Put a drop of water in the middle of the slide with the eyedropper, then put a small piece of paper in the water. Another drop on top, then give the kids a coverslip to clean. Lower the coverslip very slowly onto the water drop so as too avoid air bubbles. Then have the kids look at their slide and make more if they want. This can be combined with bughunt specimens--a comparison of wings or legs or antennae would be especially interesting.

Best Age Group: 8 - 12

Approximate Time to Make: 30 - 90 minutes

Maximum Group: 1 child per microscopes,
6 children per adult

References: Richard Headstrom Adventures with a Microscope

Commentary: Many children will not know how to work an eyedropper and this will have to be explained. Other points to emphasize--handle slides by edges, never by their surfaces; microscopes must be used in the sun, not the shade; scopes should not be moved after the light has been adjusted; keep fingers off the mirror and lenses. If a kid says that he sees something, better check-he may be looking at shadows or the edge of the slide rather than the specimen. Specimens mounted should be thin or else translucent. Good things to look at: insect wings, legs, antennae, people's hair, eyelashes, etc. bits of cotton, wool, denim, silk, nylon, e flower petals, pistils, stamens, pollen blood (use sterilized needle, no water) newspaper, salt and sugar (no water) drop of pond water (to make a well slide, smear a thin circle of vaseline on the slide; put water inside the circle) fish scales, skin scrapings, etc.

BUGHUNT

Materials Needed:	Butterfly nets, killing jar SSM-15 microscope or magnifiers, glass jars
How to Make:	The idea of this activity is to have the children make their own nets and go on a walk to a vacant lot in the neighborhood to catch insects. The variety of bugs can be surprising-expect grasshoppers, butterflies, bees, darning needles, hornets, wasps, longhorned beetles, ladybugs, and smaller flying insects. These are caught with the net, transfered to a glass jar, and from there put into the killing jar. They can then be conveniently examined with the microscope or magnifiers. Activities include pulling off and comparing legs, taking the stinger out of a bee with a pair of tweezers, putting clover in a glass jar with a live bee to see if he eats it, etc. Note: this activity is most successful on a warm day. The leader should scout out the area first to see if there are bugs around. A display can be made of the day's catch by sticking the bugs with pins onto a piece fof heavy cardboard.
Best Age Group:	8 - 11
Approximate Time to Make:	2 hours
Maximum Group:	10 per adult
References:	Simon, Seymour Science in a Vacant Lot Lubell, Winifred The tall grass zoo
Commentary:	A successful if longish activity. The killed insects can also be used for mounting in a subsequent microscope workshop. Frequently kids will know the best area in the neighborh for bughunting and can direct you there. Som sort of insect guide is helpful.

TURTLES

Materials Needed:	1 live turtle, turtle loan box from Museum
Where to Obtain:	Turtle loan box: Children's Museum contains 3 shells, two mounted specimens, pictures and Zim's guide to reptiles and amphibians
How to Make:	Similar to Birds--I just sat around and talked to kids, showing off the live turtle from time to time. Points to emphasize-the shell is part of the turtle since its backbone is attached to the shell. People have backbones too. The shell of the hawksbill turtle was used for tortoiseshell glasses and combs and brushes.
Best Age Group:	6 - 10
Approximate Time to Make:	30 - 60 minutes
Maximum Group:	6 children
Variations:	other materials are possible, including baby green turtles which could lead to a discussion of their proper care.
References:	Robert Church, Turtles
Commentary:	There are many misconceptions about turtles. The group leader should be able to deal with these. Some children think turtles can crawl out of their shells or live forever. Turtles h ave no teeth. amounted specimen is good for pointing out this fact. Have kids notice how a turtle walks. Youngsters are capable of si and listening for quite some time in th's

Commentary:

activity. Encourage them to handle the shells. Never allow a youngster to pick up a live turtle unsupervised. Turtles should have one hand on their shell and another supporting their feet--if a youngster holds it like this and is scratched by the turtle's claws, he may very well drop the animal.

SEED PLANTING

Materials Needed:	red kidney beans or lima beans or whole peas or mung beans, paper or styrofoam cups, potting soil, small pebbles, water
Where to Obtain:	beans and papercups: grocery store potting soil: hardware or dime store
How to Make:	Punch holes in bottom of cup and cover with pebbles to allow for drainage. Put in potting soil. Plant seed (3 per cup). Water. Tell kids to take it home and water when the soil gets dry (about once a day). Visible sprouts should appear in 3-4 days.
Best Age Group:	4 - 7
Approximate Time to Make:	5 - 10 minutes
Maximum Group:	6 kids per adult
Variations:	Can use other kids of seeds
References:	Play with Seeds, Millicent Selsam
Commentary:	apple, pear, watermelon and cantaloupe seeds may also be planted but they take longer (5-14 days) to sprout. Water will tend to soak right through the soil and spill onto the floor.

SPATTER PRINTS

Materials Needed:	leaves, toothbrushes, paper, nontoxic water color paint, pins, or thumbtacks
How to Make:	Tack leaves onto paper in a design. Dip toothbrush in paint. Run finger along toothbrush to spatter drops of paint onto the paper. Use different color paints in combination.
Best Age Group:	6 - 10
Approximate Time to Make:	15 - 20 minutes
Maximum Group: q	20 per adult
Variations:	run toothbrush over wire mesh (at least 1/4" square) instead of finger to spatter
Commentary:	Not one of the mosti successful activities--most kids quickly became bored. This activity shows only the outline of the leaf and as such is not terribly helpful for identifying leaves.

LEAF SKELETONS

Materials Needed:	leaves, piece of dense carpeting scrub brush
Where to Obtain:	scrub brush: hardware store
Possible Scrounge Sources:	William Harty-Science for Camp and Counselor
How to Make:	Place leaf on carpeting. Beat with the scrub brush in a straight up and down motion for 5-10 minutes. By that time only the veins will be left in the leaf. These skeletons are fragile and should promptly be either glued to a backing of white paper or placed between two sheets of wax paper with newspaper over that and lightly ironed.
Best Age Group:	7 - 10 years old
Approximate Time to Make:	10 minutes per leaf
Maximum Group:	8 per adult
Commentary:	This method works best with tough leaves such as oak or maple. Young children find it difficult to master the technique of beating straight up and down and frequently they will inadvertantly rip the leaf to shreds. Small rips are negligible, but large rips frequently render the leaf unrecognizable. However, the result is very striking when done properly.

LEAF PRINTS

Materials Needed:	non-toxic water-based colors, paintbrushes, leaves, paper, newspaper
Where to Obtain:	colors and brushes: art supply store
How to Make:	Paint the vein side (raised, bumpy side) of leaf with water color. Blot onto a piece of newspaper, then press onto good paper. The technique is tricky, and will require some practise so as not to get a blob.
Best Age Group:	7 - 10
Approximate time to make:	5 - 20 minutes per sheet of 4-8 prints
Maximum Group:	12 per adult
Variations:	use a large stamp pad, smooth the leaf vein side down, onto the pad, pick it up, and smooth it down on paper. This produces very nice, almost foolproof prints, however, it does get one's fingers very black.
Commentary:	This is more an arts and crafts type of activity than any real nature type affair. The shapes tend to be hard to pick out, and too much paint causes unsightly blobs. It is possible to try to get kids into a discussion of the different shapes and kinds of leaves.

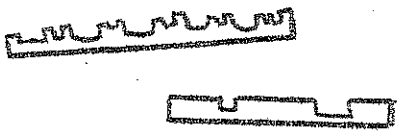
PRESSED LEAVES

Materials Needed:	leaves, newspaper, heavy weight such as books, or rocks or boards
How to make:	Place leaves between several thicknesses of newspapers, then place a flat surface. Ignore it for two weeks. Leaves will retain their color for months. Can be used in arts and craft work or mounted and identified for a display of local leaves.
Best Age Group:	6 - 8
Approximate Time to Make:	5 minutes to set up, 2 weeks to dry
Maximum Group:	12 per adult
Variations:	dry thin grasses, leaves of weeds, or thin, flat flowers such as popples with this technique.
Commentary:	Pressed leaves will retain their color for months but they become very fragile.

Constructions

WOOD SCULPTURES FROM IMPORTED WINE BOXES

Materials Needed:	1/2" nails (wire) with large heads hammers, saws, boxes
Where to Obtain:	package store
Possible Scrounge Sources:	The larger, more expensive importers seem to have the best boxes.
How to Make:	make sure to get the wooden boxes with the inside similar to a wine rack. These pieces of wood that are cut to separate the bottles, so that they will not break in shipment, interlock and can be connected in different combinations. sometimes the pieces will fit without nails--others will need the nails.
Best Age Group:	7 - 13
Approximate Time to Make:	1/2 hour of as long as attention and concentration holds out.
Maximum Group:	6
Variations:	The more materials added such as paint, cloth, spools,...the more choice
Commentary:	Younger kids enjoy just fitting the pieces together but older kids spend more time The problem with this activity is to get the maximum number of pieces. Blocks from 15-20 wine crates would be enough for a start with 6 kids. They seemed to be very quiet when doing this. Six is a good number, getting ideas from each other, a smaller group may not be as successful.



WIRE DRAWINGS

Materials Needed:	wire (bare or colored), wood, (at least 1/2", one hammer per person, saws, different size nails (mostly 1" tacks), scissors
Where to Obtain:	scrap wood can be found at furniture company
How to Make:	bang nails so that when wire is wound between them the picture is made wind wire from nail to nail
Best Age Group:	6 - 11
Approximate Time to Make:	15 minutes
Maximun Group:	12 kids (each with a hammer)
Variations:	1. the wire can be put on a grid andwoven. 2. colored string used instead of wire. 3. paints could be used on the wood.
References:	"The Dot and the Line" -- this book shows how a series of straight lines can form a curve.
Commentary:	This project is good for it provides constant banging--a good beginner to wood working.

BOATS

Materials Needed:	milk cartons, balloon sticks, cloth or paper, staplers, scissors, tape, string
Where to Obtain:	House of Hurwitz, Washington Street,: Balloon sticks
Possible Scrounge Sources:	Hood Milk Company
How to Make:	cut milk cartons, cut sail, staple together, attach string
Best Age Group:	6 - 11
Approximate Time to Make:	15 minutes
Maximum Group:	15

SCREEN HOUSE CONSTRUCTION

Materials Needed:	3-4 dozen window screens, large ball of cord (cut pieces in 8" lengths), jacknives, decorating materials (wood, cloth, tape, paper, etc.)
Where to Oba Where to Obtain:	screens: basement of Annex cord: hardware store knives: hardware store
Possible Scrounge Sources:	screens: old house or wrecked building decorating materials: Museum
How to Make:	attach the screens by poking holes in each of the corners and tying them tightly together with cord.
Best Age Group:	6 - 13
Approximate Time to Make:	1 - 3 hours
Variations:	build one large building, build one large building divided into rooms, build many small huts, decorate.
Commentary:	This was our first activity at all of th sites and in many ways our most successful. The favorite structure design was the large building with many rooms. There are many available options from mazes to domes (which we built). I favored this activity highly because it allowed a great deal of group cooperation and it was minimumally product oriented.

STRAW CONSTRUCTION

Materials Needed:	50 - 100 straws per child 75 - 150 pins per child
Where to Obtain:	straws: grocery store, pins: Woolworth's
Possible Scrounge Sources:	straws: Sweetheart Plastics Co., Wilmington, Mass., 658-9100
How to Make:	compose any pattern or design, 2 or 3 dimension, attach straws in design by first pushing pin entirely through one straw, and then through the second or third straw.
Best Age Group:	7 - 12
Approximate Time to Make:	1 - 3 hours
Maximum Group:	10
Variations:	Straws may be attached at ends by folding a pipe cleaner together in quarters, and then putting 2 quarters in the end of each straw. This is best used with younger kids.
Commentary:	Try to keep this activity small so that you can actively participate in the children's individual discoveries. This activity lends itself to a great deal of creativity, which is best fostered by a leader who is not overburdened.

INFLATABLES

Materials Needed:	plastic film, electrical tape, or mystic tape, scissors, hairdryers, vacuum cleaners
Where to Obtain:	plastic film: AAA Plastics, Cambridge tape: hardware store scissors: Lambert's
Possible Scrounge Sources:	hairdryers: borrow from friends and Museum
How to Make:	This project is best approached like the building of 3D paper solids. Desired objects are not easily constructed in sections of exact dimensions and close fitting seams. Seams maybe rolled if they are unevenly cut, to give a straight seam for tight taping, which is so necessary.
Best Age Group:	8 and up
Commentary:	These structures ma be made in almost any size. A good beginning for the activity is to let the children watch someone construct a small simple one. This will eliminate many fears related to the "difficulty" of the activity as well as allowing them to gain some first hand insight about the construction process.

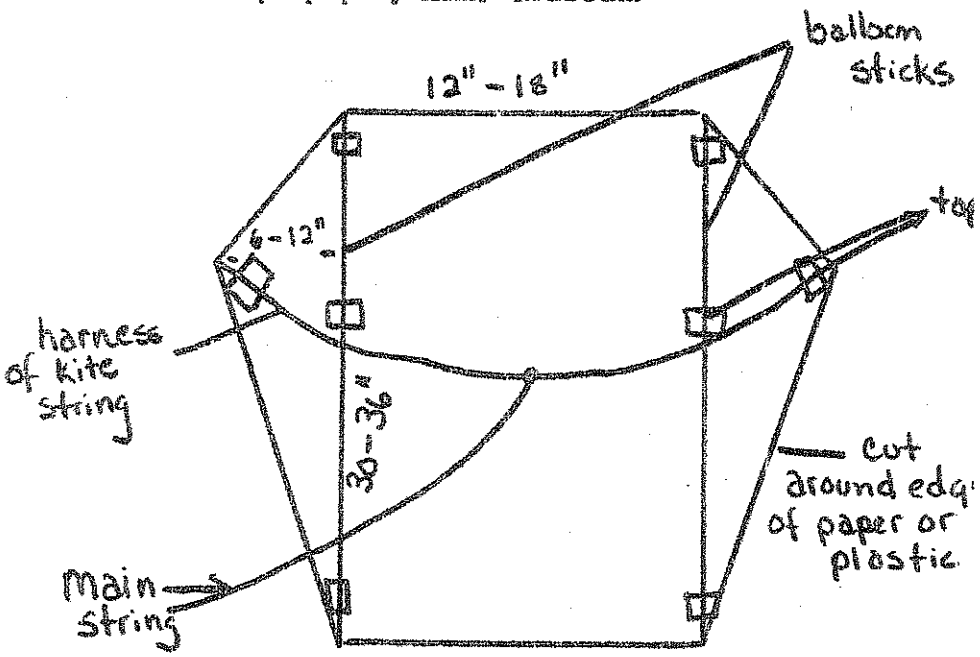
KITES

Material Needed: ballon sticks, crepe paper, plastic film (cleaner bags,) staples, tape, string, scissors

Where to Obtain: balloon sticks: House of Hurwitz
staples, tape, string: hardware store
scissors: Lambert's

Possible Scrounge Sources: crepe paper, film: Museum

How to Make:



Best Age Group: 6 - 12

Approximate Time to Make: 10 minutes

Maximum Group: 20

Variations: decorate the kites, make them different sizes.

Commentary: This is an extremely good kite to make when there is no good place immediately available to fly kites. Kids can run around with this kite behind them and it will usually stay up.

CATAMARAN BUILDING (BOATS)

Materials Needed:	quart size or larger milk cartons balloon sticks or dowels, paper, *rubber bands, *stapler (*optional)
Where to Obtain:	balloon sticks: House of Hurwitz, hardware store. rubber bands, stapler: Bernards'
Possible Scrounge Sources:	milk cartons: Hood Milk Co., trash balloon sticks: Sterrit Lumber Co. paper: Museum
How to Make:	1. cut diagonally across bottom and top of carton 2. cut on the side seams where the top and bottom cuts end. 3. bend carton open for 2 hulled boat 4. tape mast (dowel or balloon stick) to front of boat. 5. cut rught triangle of paper as high as mast and long as boat. 6. punch holes on right angle side of sail and thread onto mast.
Best Age Group:	6 - 12
Approximate Time to Make:	1/2 hour
Maximum Group:	20
Variations:	1. staple one end of a rubber band to the stern of each hull (below water line) 2/ staple cardboard rectangle to band, between hulls. 3. wind up and you have a paddle wheeler
Commentary:	This is a good boat to build with older kids as its design is more interesting and its construction more difficult. It also leads to discussions on the forward function of the more stable 2 hull design.

WOODWORKING

This project lasted the month of August. It was done to provide an activity that would keep coming back. The other Earthmobile activities went along at the same time so that there would also be other new things going on. I also gathered other materials other than wood so that as many things could be combined to open this up as much as possible.

Materials Needed:	wood, tools: hammers, saws, screwdrivers, drill, stapler, fasteners, nails, tacks, glue, staples, elastics, wire, vinyl, cloth, plaster, spools, styrofoam, gears, metal plate, plate, varnish, sandpaper.
First Week:	the tools and wood caused great excitement. Mostly boats were made (the preceding activity). Everyone wanted to have lots of wood, not to make much — but to have it. Most of the other materials were not used.
Second Week:	the excitement had lessened a great deal. A core group of kids began to come to the "workshop" and had some things like tables and houses to build, and cover with vinyl.
Third Week:	it was not until the third week (4th visit or so) that some planning and imagination were used. They never got bored with a project because they were sick and tired of wood — but often got bored from the frustration of what can I make, How can I attach these materials? Also, in the last week's more materials other than wood were combined.
Problems:	with the distribution of wood and tools: Surprisingly, there were no problems with the kids stealing tools. They could have the wood if they were to make something from it. Each kid always wants his or her wonw own complete set of tools so that sharing the tools takes a great part of the project's energy.

Problems:

It works out with lots of hassles but make them work in groups. I let them have as much wood as they wanted even if they did not know what they would do with it. It seemed best, if I had something that was new such as gears, or extra large pieces of wood, to put out a little first and then take it out as needed. Otherwise, if the load is poured out everyone must take some, for property sake only. This happened several times and resulted in veryy little of the material used to advantage. I guess that quantity might have something to do with making something common to everyone and not something to be used in a special, creative way-- A treasure becomes nothing at all.

Small Neighborhoods:

In these areas there was not the problem with tools. The small groups, 6 in the south cove and a little more in Beacon Hill worked faster because more individual attention could be given. However the same problems with how to use the materials in a unique way resulted in a time factor. That it takes a lot of exposure to something before a different way of using it develops.

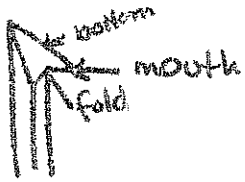
SUGAR CUBE CONSTRUCTION

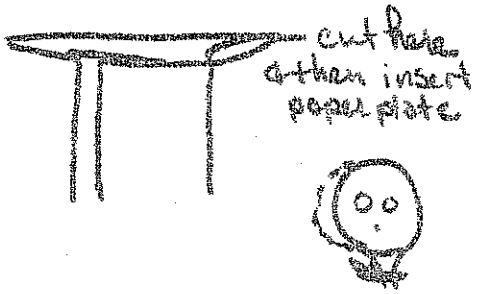
Materials Needed:	sugar cubes approximately 1 pound per child, white glue sheets of cardboard, wood, etc, q-tips
Where to Obtain:	cubes and q-tips: supermarket glue: hardware store
Possible Scrounge Sources:	cubes: Domino Sugar Company cardboard: Museum Gift Shop, Warehouse
How to Make:	1. work on cardboard or wooden base 2. arrange cubes in any manner with or without glue to explore modular construction. 3. try defining predetermined spaces by placing cubes in different patterns 4. simulate different masonry techniques
Best Age Group:	8 - 12
Maximum Group:	10 kids
Variations:	building blocks of any sort
Commentary:	This activity seems to work best in a somewhat controlled atmosphere where the children are least likely to be disturbed. The smallness and the regularity of the modules makes this activity difficult for some of the kids to get involved in. It is definitely not one of the better modular construction activities that we used.

Puppets & Masks

PAPER BAG PUPPETS

Materials Needed:	paper bags, crayons, construction paper, tissue paper, glue, scissors
Where to Obtain:	sandwich paper bags: grocery store everything else: art supply store
How to Make:	use the fold as a mouth and decorate
Best Age Group:	2 - 9
Approximate Time to Make:	10 minutes
maximum group:	15
Variation:	slit paper bag across folded bottom corner-insert folded paper plate and staple. This serves as a mouth - decorate. Another variation stuff paper bag full of old newspaper etc., that's the head of puppet--insert rod or add costume.
References:	Puppets for Play Production by Nancy Renfro Natalie Faldasz for folded plate mouth ones.
Commentary:	The variations are actually more interesting looking puppets than the original.

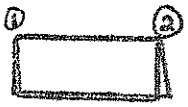




NEWSPAPER PUPPETS

Materials Needed: 1 sheet of tabloid sized newspaper (BAD was used)
crayons

How To Make:



1. fold newspaper along middle crease so you now have a rectan

2. fold down corners 1 and 2 so they meet in the middle

3. fold up the bottoms of both sh-e to make a hat.

4. open from the center of bottom A and fold flat along new lines

5. fold up corner B to corner C on one side; turn paper over and fold up corresponding corner B to C on the other side.

6. open from center of bottom D and fold flat as in step 4

7. fold along line E to make a trian-shaped puppet. Slide in fingers to manipulate top and bottom half of mouth---decorate.

Best Age Group: 6 - 10

Approximate Time to Make: 15 minutes

Maximum Group: 6 per adult

Variations: use construction paper cutouts glued on for eyes, nose, etc.

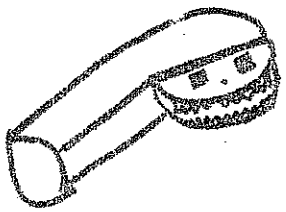
Commentary: Easier Done Than Described. Too difficult for young children. Kids who have learned how can be used to show others how to do it. These puppets, while not very sturdy, make good toys and can show kids how to make something useful from old newspaper.

PAPER PLATE PUPPETS

Materials Needed: paper plates, construction paper, glue, tissue paper, staples, staplers, cloth scissors.

Where to Obtain: paper plates: grocery store
all else except cloth at: art supply store

How to Make: fold palte in half that's the mouth, attach decorations. Staple one strip of cloth on top half of puppet, one on bottom, glue or staple together and from a sleeve.

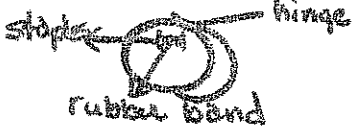


Best Age Group: 4 - 10

Approximate Time to Make: 15 minutes

Maximum Group: 8

Variations: use 2 paper plates--staple at one edge for hinge--in each plate staple rubber band.



References: Puppets for Play Production, Nancy Renfro, Boston Public Library

Commentary: This is a good-easy way to make a puppet. Requires quite a bit of supervision with the stapling if using younger kids. The more paper and less crayons you use the better the puppets looks.

PAPER-MACHE PUPPETS

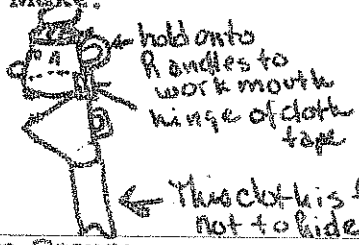
Materials Needed:	balloons, flour, water, newspapers, mixing pan, cloth, glue paint, yarn, buttons, other decorations, staplers, scissors
Where to Obtain:	balloons, mixing pan, buttons, yarn, cloth: dime store flour: grocery store glue, paint, staplers, scissors: art supply store
How to Make:	blow up balloons (about 1/4 capacity). Mix a thin flour and water paste-dip short thin newspaper strips in the mixture and cover balloons a few at a time. let dry. pop balloons and decorate- painting them first is a good idea. Attach a cloth costume to the neck of the puppet with glue or staples.
Best Age Group:	7 - 12
Approximate Time to Make:	10 minutes after it dries (1-2 days) 20 minutes decorating
Maximum Group:	10 kids
References:	Whitman (publisher) paper mache, Puppets for Play Production by Nancy Renfro, Hand Puppets by Laura Ross Boston Public Library
Commentary:	If you make the kids remove most of the flour-water mixture after dipping the newspaper strips into it then the balloons will dry faster. The thinner and shorter the newspaper strips, the easier it is for small children to cover the balloon smoothly. In some areas decorating the puppets takes quite a bit of supervision with the younger kids helping them get a puppet that has any character or imagination (this was true in Hyde Park).

PAPER CUP PUPPETS

Materials Needed: paper cups, construction paper, tissue paper, scissors, glue, cloth tape, cloth

Where to Obtain: paper cups: grocery store
cloth tape: hardware store
all else: art supply store

How to Make: Take 2 paper cups and attach handles if they don't have any. Place a piece of tape as a hinge on the edges of the open ends of the cups. Decorate.



Best Age Group: 6 - 10

Approximate Time to Make: 15 minutes

Maximum Group: 8-10

References: Puppets for Play Production, Nancy Renfro, Boston Public Library

Commentary: This is a very good puppet. However, you can see the kid's hand as he operates it and some kids don't like this.

ROD PUPPETS

Materials Needed:	styrofoam cups, styrofoam balls, cloth, glue, cloth scraps, yarn, staplers, buttons-any kind of decorations, balloon sticks, scissors
Where to Obtain:	styrofoam cups: grocery store glue, yarn, staplers, buttons: dime store balloon sticks: house of hurwitz
How to Make: 	attach styrofoam ball to one end of balloon stick. Stick the balloon stick through the bottom of an upside down styroroam cup. Attach material to styrofoam ball and bottom edge of cup and decorate.
Best Age Group:	7 - 11
Approximate Time to Make:	20 minutes
Maximum Group:	6 kids (a few more if older)
Variations:	use cloth or sock stuffed with rags for head-use paper cups instead of styrofoam
Commentary:	the styrofoam balls don't work well the kids have never seen them before and they want to take them and not use them. It works better with the stuffed cloth or socks. It worked well in Hyde Park but in East Boston, there were too many kids and the kids were overly fascinated with the styrofoam ball. This works poorly with younger kids because it takes a bit of time and effort to produce an effective puppet.

FINGER PUPPETS

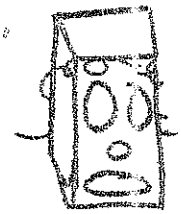
Materials Needed:	cardboard or construction paper, scissors, crayons--other decorating materials
Where to Obtain:	art supply store
Possible Scrounge Sources:	some cardboard obtained at ICA (old building) scrounge warehouse Soldier's Field road, Allston, Mass.
How to Make:	bend cardboard and put 2 holes in it for fingers, draw a figure above it with the fingers acting as puppet legs.
Best Age Group:	2 - 7
Approximate time to make:	5 minutes
Maximum Group:	6
References:	Hand Puppets, Laura Ross, Puppets for Play Production, Nancy Renfro, Boston Public Library
Commentary:	Very good and easy for younger kids but not too exciting as a finished project. With a little help the younger kids can do the other puppets and the end product really does look like a puppet.

PAPER-PLATE MASKS

Materials Needed:	paper plates, scissors, glue, string, construction and tissue paper and anything else needed to decorate.
Where to Obtain:	paper plates: grocery store string: hardware store all else: art supply store
How to Make:	cut holes for eyes, nose, mouth and for string. Then decorate.
Best Age Group:	4 - 11
Approximate Time to Make:	10 minutes
Maximum Group:	15 (more with smaller kids, less with older kids)
Commentary:	The more paper and less crayons and paint you use the better the paper plates work. Having a game or play-acting activity using these masks might be a good idea.

MASKS (PAPER-BAG)

Materials Needed:	paper bags, scissors, crayons, glue, construction paper, tissue paper, anything else needed for decorating.
Where to Obtain:	paper bags: grocery store all else: art supply store
How to Make:	cut out spaces for eyes, nose, mouth; then decorate.
Best Age Group:	4 - 11
Approximate Time to Make:	10 minutes
Maximum Group:	15 kids (less with younger kids, more with older kids)
Commentary:	The more paper you use for decoration the better it looks. This was quite a good activity. It might be nice to organize some games or playacting using the masks.

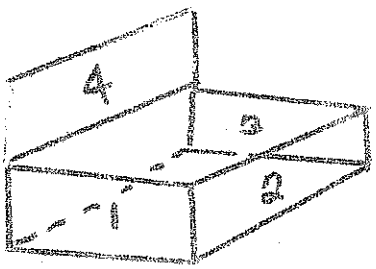


SET DESIGN PUPPET THEATRE

Materials Needed:	paper (brown or newspring, any large size is okay), pencils, paint, markers, cardboard, tape
Where to Obtain:	pencils, paint, markers, tape: Bernard's Art Supply
Possible Scrounge Sources:	paper, cardboard: Museum
How to Make:	Designing the backdrop for the set of theatre is mainly drawing or painting a picture. The designers will have to talk to the players about their script and puppets so a proper design may be achieved. Other necessary props can usually be made fro incorrugated cardboard. Obviously this activity can be as simple or complicated as one wishes to make it.
Best Age Group:	8 and up
Maximum Group:	6
Commentary:	The nature of this activity depends not only on the set designers but on the puppeteers as well. A spirit of cooperation must exist if this part of the show is to be relevant. This is an activity where the leader can have a great deal of positive influence on an often chaotic situation, where all of the kids are far into their puppets, but not each other.

PUPPET THEATRE BUILDING

Materials Needed:	old shipping crates, 10 penny nails and brads, hammers, saws, staplers, paper
Where to Obtain:	nails, brads, hammers, saws, staplers: hardware store
Possible Scrounge Sources:	crates: departments stores paper: Museum
How to Make:	Appliance shipping crates are usually made of light wood, stapled into sections, and nailed together around the piece to be shipped. It is easiest to make the stage from these preformed sections, by separating them and sawing (only if necessary). Then them to the appropriate size. The stage is basically a 4 sided, rectangular enclosure with the fourth side being in the normal place for a rectangle, but raised so that the bottom of this 4th piece begins at the top of the 2 pieces which support it. Cover bottom front and sides with paper to hide kids, and hang backdrop from fourth side.
Best Age Group:	8 - 14
Approximate Time to Make:	2 hours
Maximum Group:	5
Variations:	The theatre design used here is free standing. Many variations maybe introduced using a wall or the corner of 2 walls.



Paper-making and Printing

PAPER MAKING

Materials Needed:

blender, 2 irons, old newspaper, screening, wood, sponges, large pan, water

Where to Obtain:

screens, sponges, blenders, irons: hardware store
pan: dime store,
The Visitor Center

Possible Scrounge Sources:

wood: Sterrit Lumber Co., 50 Albany Street, Cambridge, 547-0040

How to Make:

1. tear 1 tabloid sheet (or more) into small pieces, mix with 1 quart water into blender till fine.
2. dump sluury into pan with 3 quarts water, stir.
3. make 2 frames from light wood (any size you want, but it has to fit in the pan) and cover 1 side of one with screening (window type will do, but small mesh copper screening is stronger).
4. place the 2 frames together with the screened side in the middle.
5. dip 2 frames into slurry (screened frame down), wait a few seconds and pick up straight.
6. remove top frame
7. place 2 pieces of newspaper on slurry on screened frame and turn the whole thing over.
8. press screen with sponge to absorb excess water.
9. remove screen
10. cover top side with more newsprint so you have a sandwich.
11. iron dry

Best Age Group:

6 - 12

Approximate Time to Make:	5 minutes
Maximum Group:	4 (but waiting line can be up to 20)
Commentary:	This is quite an exciting project for kids--it is good to try not get rushed and explain to each kid a little about what he is doing, i.e. recycling paper, or the similarities between this and the actual process of making paper.

ERASER PRINTING

Materials needed:	big green erasers, exacto knife, blades, stamp pad, stamp pad ink, paper
Where to Obtain:	Office and Art Supply store
How to Make:	cut a design in eraser with exacto knife (one blade lasts about 5 erasers) THIS IS FOR ADULTS ONLY stamp eraser on pad and print on paper. re-ink pad whenever necessary.
Best Age Group:	2 - 9
Approximate Time to Make:	as long as attention last 5-20 minutes
Maximum Group:	as many as materials can accomodate
References:	Mary Eisenberg---WCT
Commentary:	This is a nifty activity, absorbing large numbers of kids. It does not easily lend itself to creativity, however it does introduce kids into certain basic principles of printing.

GADGET PRINTING

Materials Needed:	paint, all kinds of gadgets (kitchen) paper, sponges and containers.
Where to Obtain:	gadgets, thin sponges: dime store or hardware store paint: art supply store
How to Make:	pour small amount of paint on sponges that are in containers. push gadget on paint--i.e. sponge and then onto paper.
Best Age Group:	3 - 10
Approximate Time to Make:	attention span
Maximum Group:	as many as materials accomodate
References:	Whitman(publisher) book on printing. Boston Public Library
Commentary:	after about 1/2 hour to 45 minutes of this activity, in 3 out of 4 neighborhoods this activity ceases to be printing and paint is spread around with sponges and hands. It gets very messy.

PRINTING WITH VINYL

Materials Needed:
vinyl (the thicker type often bonded with foam rubber)
scissors, glue (Elmer's)
any hard backing (wood, triwall)
stamp pads or thickened tempera,
paper or printing surface,
pentels

Where to Obtain:
hardware store, art supply

Possible Scrounge Sources:
vinyl scrounged at National Foam Rubber Company

How to Make:
1. kids draw on the vinyl (any size)
2. cut out shape drawn
3. glue cut out shape to a backing
4. put ink or paint on printing block
5. print on a surface (paper) as you would a linoleum cut.

Best Age Group:
5 - 11

Approximate Time to Make:
15 minutes

Maximum Group:
10

Variations:
as in any printing this project is a good discovery for surface textures. Differences in the print can be seen using:
- either side of the vinyl
- a backing with a different texture
- the material printed on
- the surface on which the printing is done

milk cartons were used, on which the vinyl was pasted on the bottom and murals were made

Commentary:

This project was successful when the group decided on a theme or picture that they would like to work on together. A farm was done where each child chose to be a bird, dog, tractor, duck, chicken, horse... I provided a horizon, corral, and pond.. of course, there could be as many prints of the same block on the picture--the effect was nice. The final picture was left at the Community Center. Each kid took home a block.

VEGETABLE PRINTING

Materials Needed:	vegetables, sponges (thin), containers, paint, paper
Where to Obtain:	vegetables: grocery store paint: art supply store sponges: dime store
How to Make:	Pour small amount of paint on sponges that are in containers, press vegetable (halved) into paint, i.e. sponge and then onto paper.
Best Age Group:	3 - 10
Approximate Time to Make:	attention span
Maximum Group:	as many as materials permit
References:	Whitman (publisher) book on printing
Commentary:	Especially good vegetables are:

onions	oranges	green
lemons	artichokes	peppers

CARDBOARD PRINTING

Materials Needed:	cardboard, scissors, glue, speedball ink, breyers, masonite board (or other paint plate) paper
Where to Obtain:	Scissors, glue, ink, breyers: art supply sotre
How to Make:	Cut out a design of pieces of cardboard and give on another sheet of cardboard or heavy paper (do not overlap glued pelces) Roll ink on masonite board with breyer and then roll on cardboard. Print on paper.
Best Age Group:	6 - 11
Approximate Time to Make:	attention span
Maximum Group:	as many as materials allow
References:	Whitman (publisher book on printing.
Commentary:	This project didn't work as planned for a variety of reasons. First of all the cardboard was so thin to provide adequate relief so the prints weren't clear. But any thicker cardboard might be too difficult for the kids to cut through. Secondly, the kids had never used breyers before and didn't know their intended purpose. However they did make some interesting designs using the breyer as a paint applicator.

Miscellaneous

PAPER-MACHÉD POTATOES

Materials Needed:	potatoes, flour, water, newspapers, petroleum jelly, kitchen knife, big mixing pan.
Where to Obtain:	potatoes and flour: grocery store petroleum jelly: dime store, drug store pan and knife: dimestore
How to Make:	grease potatoes with petroleum jelly-make thin flour and water mixture, dip thin short strips of newspaper in mixture and cover potato (about 3 layers). When dry cut in half, remove potato and paper maché back together. Then make it into anything you wish.
Best Age Group:	4 - 10
Approximate Time to Make:	5 minutes, dry a few days, then attention span
Maximum Group:	20 kids
Variations:	You can cover anything you want with paper-maché.
References:	Whitman(publisher) book on paper-mache, Boston Public Library
Commentary:	This is a lousy project. My potatoes rotted before they dried and most of the kids had no idea what they were making or why. (of course, they didn't get to see the finished product). This is a very messy activity---covers everything with newspapers! If the kids remove most of the mixture after dipping the newspaper strips in, the object has some chance of drying--- otherwise it's practically hopeless.

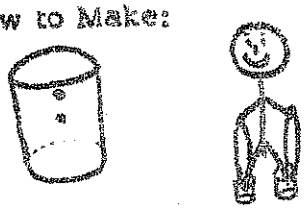
PAPER MACHE ANIMALS
1/2, 3/4, full size

Materials Needed:	flour, water, 2" mesh chicken wire, nails, staple gun, tape, newspaper, shipping tacks, 3" steel angle braces, 1/4"x1" stove bolts and nuts, brace and bit, counter-sinking bit, pliers, screwdriver.
Where to Obtain:	flour: grocery store, wire, nails, staple gun, tape, braces, bolts & nuts, brace & bit, counter-sinking bit: hardware store,
Possible Scrounge Sources:	newspaper: BAD, Globe, trash, Museum shipping tacks: International Paper
How to Make:	1. drill shipping tubes and bolt 3 or 4 together for the body 2. drill the bottom of the body and attach angle braces at 4 corners to attach the legs. 3. drill 4 more tubes to be attached to angle braces as the legs. 4. from in ends of body with chicken wire, nails, and staples to provide a paper macheable surface. 5. make a head from balls of wire, newspaper, and tape 6. stuff gaps with newspaper and tape over. 7. cover with paper mache 8. paint or finish as desired.
Best Age Group:	4 - 14
Maximum Group:	10 for frame, 30 for actual mache
Variations:	Make any animal, any size.

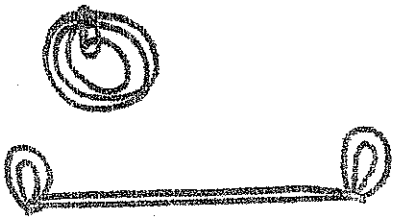
Commentary:

Building the armature should be done by older children as some strength, dexterity, and design sense are needed to operate the tools and produce a machéable product. The latter part is a great large group activity easily encompassing all ages and lasting as long as one wishes to keep adding layers. Caution: Do not add more than a couple of layers at a time, as drying will be hindered and the product will lose strength.

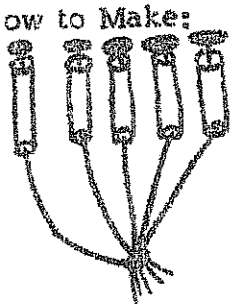
TIN CAN STILTS

Materials Needed:	tin cans, a large nail, hammer rope, knife
Where to Obtain:	hardware store
Possible Scrounge Sources:	can: trash
How to Make: 	bang 2 holes opposite each other on the sides of the cans. Put a long rope through the holes, connecting the rope at a proper length so that one rope can be held in each hand.
Best Age Group:	10
Approximate time to Make:	5 minutes
Maximum Group:	2 cans per kid
Commentary:	at Hyde part I made 60 pairs in about 1 1/2 hours. This project is very noisy and should be done outdoors. It is better if the kids save and supply their own cans.

GLIDER PLANES

Materials Needed:	soda straws, paper clips, strips of construction paper: 4"x1" 8"x1"
Where to Obtain:	soda straws: grocery store paper clips: stationary store paper: Bernards, (Centre Street)
How to Make:	 Roll strip of paper and fasten so that small end of paper clip is inside the cylinder form. Push straw into this small end. Repeat with other paper clip and paper strip. Glider plan is now assembled- launch with small paper strip end first.
Best Age Group:	4 - 8
Approximate Time to Make:	5 minutes
Maximum Group:	12 per adult
Variations:	Kids may want to invent their own designs - by all means let them, the see whose plane goes farther.
References:	The Scientific American Paper Airplane Book
Commentary:	A quick "discovery" good for an introductory or filler activity

STRAW WEAVING

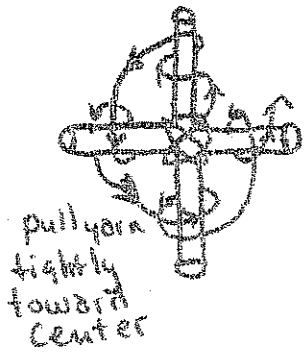
Materials Needed:	drinking straws, yarn of various colors, scissors
How to Make: 	cut straws in half, Cut five pieces of yar each twice waist size. suck up through straws and tie big fat knots at the end. At the other end, tie all five strings together. Start weaving in-and-out from the bottom; as the weaving fills up the straws, push it down towards the bottom onto the strings. When it is of belt length, cut off the knots, remove the starws, and tie the five strings together at the end.
Best Age Group:	8 - 11
Approximate Time to Make:	for a finished belt, 3-6 hours
Maximum Group:	6 per adult
Variations:	use more or fewer straws; make headbands, bracelets, doll clothes, etc.
Commentary:	popular with girls--easy to do. The hardest part is tying the knots big enough so that they won't slip through.

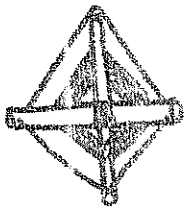
GOD'S EYES

Materials Needed: yarn (a few different colors), 2 sticks, about ○ in circumference

Where to Obtain: yarn: dime store or yarn store
sticks: House of Hurwitz for balloon sticks

How to Make: Make the 2 sticks into a cross, knot and entwine yarn around to make them stay in position. Start wrapping yarn going onve around each stick always going over stick.
To change colors just cut and tie on new colored yarn. Tie off at ned.
The yarn will form triangles of colors.





Best Age Group: 8 - 12

Approximate Time to Make: depends on size. 15-20 minutes if one stick is about 1 1/2-2 feet long.

Maximum Group: check Commentary

Commentary: Each kid needs individual help to start but after that it's fairly easy. A ratio of 6 kids to an adult should be sufficient depending on level of manual dexterity.

BUBBLE BLOWING

Materials Needed: soap solution (dishwashing liquid in water), large shallow waterproof container, straws, spools, orange juice cans with ends cout out, paper towels rolled into cylinders, *shallow tray, *karo syrup (*optional)

How to Make: soap solution: 1 part dishwashing liquid to 12 parts water, 1 part Karo syrup
Mix and let stand for 48 hours before using. Experiment for the best solution to use- Joy lemon dishwashing liquid seems to work well. Pour solution into large container and let kids experiment with blowing bubbles- small bubbles, multiple bubbles, strings of bubbles.
A small amount of solution on a shallow tray can be used with a straw to blow ver large bubbles. Kids can also blow a large bubble, then blow smaller ones around it. Take a tin can with its bottom intact, place it into the soap solution on the tray and pull up to form a cylindrical bubble.

Best Age Group: 4 - 11

Approximate Time To Make: 5 - 30 minutes

Maximum Group: as large as the container will allow

Variations: other bubble-blowing materials may be used-cardboard with a hole cut in the middle, bent wire, etc.

Commentary: With large numbers of kids that this activity attracts, it is sometimes difficult to control the production of soapsuds in the container which makes it difficult to blow bubbles. These suds usually have to b skimmed off the top and discarded. This activity is best done outside, where there ar large numbers of kids.

SEED MOSAICS

Materials Needed:	birdseed, lima beans, red kidney beans, lentils, etc., Elmer's or similar glue, heavy paper, Q-tips
Where to Obtain:	birdseed: hardware store Beans: grocery store
How to Make:	Glue seeds onto paper to make pictures and designs. The use of Q-tips as applicators for glue eliminates a great deal of mess, and they can be thrown away after using.
Best Age Group:	8 - 11
Approximate Time to Make:	10 - 45 minutes
Maximum Group:	20 per adult
Variations:	Use salt and pepper-spread glue on paper where desired, then sprinkle on salt or pepper. Try other kinds of seeds-split peas or different beans.
Commentary:	Messy-seeds get all over the place. An arts and crafts activity. Spread newspaper over work area--glue will be dripping. kids should not hold pictures vertical until glue dries.

Commentary

I. Our objectives as originally conceived were:
   A. To use materials that were easily available to the children
   B. To create an environmental awareness through:
      1. Structures
      2. Natural Science and Ecology
      3. Sensory Awareness
      4. Paper (including printing) and Mapping

II The Reasons our objectives were not fully acheived
   A. It was apparent that most of the kids wouldn't attempt the projects on their own.
   B. We set a precedent for product-oriented activities from the start
   C. The continutiy of our program was only apparent to us.

III. Scheduling Recommendations for next year
   A. Each staff member works only two afternoons but always at the same site
   B. There shoulc be one full day off (Friday) in addition to the afternoons
   C. These recommendations are valid providing the mornings deal with large groups of children and the afternoons with small.

THE NEIGHBORHOODS

Hyde Park--We had about seventy-five to one hundred white middle-class kids. They were so used to doing what they were told that there were no discipline problems. Previously there had been a precedent set there for product-oriented activities which we fell into. The municipal building had a public school atmosphere and we felt the kids needed a more unstructured situation with the freedom to experiment x with materials on their own. We would recommend activities without products or maybe just a community one. We felt they should be given long exposures to materials so that the enjoyment would stem from working with the material rather than possessing a finished product.

South End-- Between three and ten lowerx class white kids showed up everytime. They all lived immediately adjoining the center. They were unenthusiastic and only came when they had nothing better to do. There was a lack of rapport between the director and the kids. We was hoping that the Earthmobile could pull the neighborhood together when his center and the arts center couldn't do it. We would reccommend that the Earthmobile shouldn't use this area again.

South Cove--We had between five and fifteen Chinese children. They were very product-oriented and facile. They had very definite likes and dislikes. They expected good materials and sophisticated activities. The Quincey Community Center provides a good program with excellent facilities. We recommend a very advanced program be set up here or that the Earthmobile go to an area which is not so well covered already.

East Boston-- This is an isolated project of racially mixed lower class kids. We usually had between fifty and one hundred younger kids show up. The kids only ripped off things the first few times. But they did it blatantly to see our reactions. There are really no other programs in that projects so the kids were just happy that we were there. They really need alot of attention. We felt the younger kids needed exposure to materials and people. A program for the olderboys that we didn't reach is also recommended. We all felt that this was an area of great need and great potential.

Beacon Hill--We got between ten and thirty middle class kids. Some mothers came but they regarded us as a baby-sitting service and didn't involve themselves. They brought very young kids that couldn't fit into our program. The older kids, however, did some nice things and showed potential for going further in many ways. The site was bad because there was no place to work outside and the people who ran Hill House were not very cooperative.

The sensory awareness perspective was conceived as an approach to environmental awareness through self. The perspective consisted of an exploration of the five senses through exercises, activity, photography and tape recording. The original sequence of programs worked from was:

Part I --- SOUND

walk - general all senses
walk - non-visual exercises
tape recorder
musical instruments

Part II --- TOUCH

tactile experiments
mazes
artificial environments

PART III --- VERBAL

MUTE EXERCISES
non-verbal communication
mime
symbols

Part IV --- VISUAL

exercises
optical illusions
photography
rented films
bleach out
color trays
tie dyes
movie making
design a city
space position walk

Working schedule emerged as:

Part I --- SOUND
walk-general and non-visual
exercises
tape recorder
musical instruments

Part II --- VISUAL
EXERCISES
optical illusions
photography
color trays
tie-dye

Part III --- TOUCH
inflatables

Generally the program as conceived wa s unworkable. It was a victim of the product orientation of the children, a non-creative "school-mindedness," and a brief experience with our program.

The high risk of failure component in this program was something I dealt with before the summer began so I was not taken unaware when much of the program proved unworkable. One factor which played heavily into the lack of general success and that I failed to foresee, as a difficulty was our schedule. Two exposures a week is insufficent time to establish a core group, counter act a non-creative school orientation and also to explore in any depth the five senses. As indicated from the working schedule only a small part of what I wanted was attempted. The activities which were selected were subject to arbitrary choice and non subject related facts such as the time and number of kids involved.

I feel the sensory awareness perspective is a valuable and exciting one to explore with children. I also feel it si difficult in the context of our program with the difficulties mentioned in this and the joint commentary to successfully pull it off. A learning center situation would support this type of program much better than a program of our format.

Katherine Kamiya

EARTHMOBILE EVALUATION

The objective of my program for the Earthmobile was to give youngsters a greater appreciation and understanding of the natural world around them. I had varying degrees of success, depending on which neighborhood I worked in. At Beacon Hill, South End, and South Cove, I was not able to do anything beyond simple microscope work. This was due partly to the small number of kids, their age, and the total lack of any sort of vacant lot or weed patch that I could use for my work. I seemed to have the most success in Hyde Park and East Boston, with kids who were at least six years old.

I had originally divided up my program into four areas--plants, animals, rocks, and weather. I was not able to do anything with weather, and tried rocks only once, at East Boston. Eventually, it boiled down to just plants, animals, and microscopy.

I devoted one day in Hyde Park to a walk to a nearby wooded area where we collected leaves with which to work with on projects when we got back to the municipal building site. On the walk, I identified different kinds of plants for the kids and they asked questions--some of them I was totally unable to answer. The kids seemed to like this activity and I feel they may have learned something. However, I feel that I made a bad mistake by making the collection of leaves the primary objective, for when we got back, the kids became bored with leaf prints so much faster than I had anticipated. Things would have perhaps gone better if I had made the walk the major activity and then just had the kids press the leaves when we got back, for purposes of identification and collection.

A popular activity was planting seeds. This could be done in one of two ways--either by placing seeds on a paper plate covered with a wet paper towel (see birdseed gardens) or else by planting in dirt. Kids don't really believe something is going to grow until they actually see it. The one problem with seed-planting activities is that they necessarily take several days to show any results, and in that time the kid or his mother is likely to throw it away. Also, kids may forget to water plants that have been started in dirt. However, if something does grow, the kid is usually really thrilled.

Bughunts were always successful. Kid could either make their own nets or else use just jars, though nets are a must for catching butterflies or moths. Usually after kids had tired themselves out by running after insects on a hot day, they were willing to sit down and look at them under a cmicroscope for a while. Almost any sort of overgrown field or weed lot will yield up a surprisingly large number and variety of bugs. These bugs can then be looked at with the SSM-15, mounted for a display, or cut for a microscope workshop with the ESM-100. At Hyde Park and East Boston we only had field-type environments, although wooded areas are also very good for small-game hunting as this.

A totally different type of approach to animals was to take a live specimen and some mounted ones out to the sites with me. I did this sor of thing twice at Hyde Park-once with turtles and once with birds. At Hyde park it went over rather well-the kids could be counted on to sit and listen for a time, and not be disruptive if they got bored.

I did more work in microscopy than I had expected. I used the SSM-15 extensively-it was a good introduction for kids who had never seen a microscope before. Towards the end of the summer I tried some microscope workshops with the ESM100 in East Boston and Hyde Park. These workshops are most successful when there is a small number of kids eight years old and over. I always insisted that kids practise looking at prepared slides first, before they try doing any of their own. Frequently a kid will start off looking at something and decide right away that he doesn't like it--the idea of a practise period can help the leader determine which kids will really get into the stuff and plan accordingly. In East Boston, I noticed that many kids who initially were turned on by the idea of a microscope quickly lost enthusiasm when they found out that theyy had to fiddle w th it and adjust things. In both East Boston and Hyde Park, kids seemed to start off with the impression that one could just look at a microscope and something would magically appear, and they wouldn't have to move a finger. One thing that I didn't like about the microscope workshops, however, a workshop involved bringing out foreign materials to kids, for a one-time exposure, and then taking everythin back. I think that it is much more valuable to a child to offer him a different way of looking at familar things.- -which is why I liked bughunts so much as an activity. Informal "nature walks" around the city are also interesting, if you can keep the kids from wandering off. However, for this sort of activity the leader has to be fairly knowledgeable himself.

If there is to be some sort of ecology program on the Earthmobile next year, then the location of the site should be chosen with this in mind. The best sort of place is an overgrown weed lot with a minumum of broken glass and other dangerous junk, big enough so that kids can run around in it, and preferably free from poison ivy. If there are trees around, so much the better. At Hyde Park there were two good sites within walking distance from the center-a wooded areas with trees and an overgrown gtangle of weeds. At East Boston, near the site was a large hill that had been allowed to follow nature's path and consequently was teeming with assorted plants and insects.

As far as general advice goes - kids will be popping up with surprises all the time. It is important in this sort of program to remain flexible and to follow any hints the kids may give as to what sort of science-oriented program they would prefer. Also, I found that at times, to my dismay, I was adopting a very school-teacherish attitude towards the kids and expecting to want to learn stuff because I said so. In a Earthmobile-type program, the idea is to get kids to learn things because they want to. And frequently kids will plunge themselves into a subject with little, if any, incentive.

I feel that as far as the summer went, the effectiveness of my program was limited. At hyde Park and E. Boston, the only places where I had good sites, there were too many kids for me to work effectively. At the other sites, the kids were fewer in number, but there simply weren't any weed lots. Hopefully next summer will be bett

Ruth Cole

EARTHMOBILE EVALUATION

As most of my specific feelings concerning this year's Earthmobile, and my recommentations for future Earthmobile are included in the group commentary, I will talk briefly about "open ended materials workshops" and our con[illegible]contact with them this ummer.

The first day of the Earthmobile '71 project were occupied mainly by the building and decorating of window screen houses. With this activity, it was evident from the very geginning that there would be no product to tak home. It was also evident that any work to be done would have to be done in grups. In Hyde Park and Beacon Hill the kids chose to construct one large structure with many rooms. In each case, groups formed to construct and decorate these rooms and sometimes to even help other groups. East Boston produced a number of separate structures, showing a strong segregation of age, sex, and race, where the bulk of concern in other locations had been with age. The project proved completely absobing for the 2-3 hours that we were on location and probably would have lasted considerably longer if we could have stayed. There was no product and little supervision.

During the last weeks of the Earthmobile project we introduce a woodworking workshop which ran almost through the end of the project. This time their was a product of sorts, but it was totally determined by the kids. There was also a minimal amount of supervision which dealt mainly with the safe and efficient use of simple hand tools. For the first week most of the kids were content to just bang nails and saw wood without any particular product in mind, Those who did wish a product were content with minimal construction such as boats or book ends. Over the second and third weeks , the kids became increasingly familiar with their tools and materials. During this time we broadened the scope of available materials by introducing cloth scraps and metal machine parts. The products became extremely diversified almost immediately. They ranged from cradles to clothing, to abstract forms* (*which were valued as much as any other object form produced)

As time passed, the kids approach to the materials changed in many more ways than in what they produced with them. At the beginning upon our arrival, there was always a rather frightening rush for the materials and tools, followed by great arguments over hoarded supplies. As abilities, confidence, and determination grew(without much help from us) these problems subsided in almost all cases.

My point in making these statements is simply a kind of indirect recommendation to discovery workshop crews. Kids don't necessarily need a product to satisfy them, and without "helpful" suggestions on what to do with their materials they probably will be able to decide what they want, when they want it, and if they want it at all.

Bob Lundvall

EARTHMOBILE EVALUATION

The Earthmobile did not accomplish completely what it had set out to do. Kids in the neighborhoods did not become environmentally aware to the extent that Earthmobile got excited about teaching. The time and involvement would have had to be greater to get the kind of awareness that was hoped for. I don't think that going to one neighborhood five days a week for the entire summer would have done the job either. That would have been overstuffing for both the kids and Earthmobile. The types of projects proposed could have become successful by going to one neighborhood a couple time a week for a couple of years. In order to get immediate feedback, especially acceptance, we used what we knew they would like, we began by making things that they woul like to have--this started the ball rolling in the wrong direction.

This summer was not a failure. Some kids would ask how can I do? and show me how? instead of make me a _____/ When cleaning up woodshop in Hyde Park, I told a group of kids that they could have the extra wood scraps if they would clean up. At this point, they were hoarding the scraps, arguing who was to get the biggest pieces. No one knew what they would do with the scraps except Mike, who didn't want any scraps and did more than his share in cleanup. He said he didn't need any wood because he had made a battleship. His fantastic ship of rubberbands, gum wrappers, wood and nails was all he needed to take home. Mike was a constant nuisance. I would not expect him to turn on next time, but over a stretch of time I'm sure he could develop the "Environmental Awareness." There were some other kids who were also mischevious at first and near the end began to get involved--Many of the kids liked us and looked forward to us coming. Usually the same group of kids cam each week. We were unlike other conventional summer programs in that we exposed them to using materials they had ... never used or ~~using materials they had~~ thought of using before, many of which could be found around the house. For this reason the Museum was received positively in each of the neighborhoods even in the South End which did not come up with the number of the kids expected. As in the Visitor Center, paper making took all their attention with its quick magic.

Had there been someone working on Earthmobile who came from one of the neighborhoods or planned to work for the Museum for a longer period of time, any continuing work to be done in any of the neighborhoods might be set up easier. The area with greates potential is East Boston.

This summer was very valuable for me.

Ben Fieman

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Musical Instrument Recipe Book, EDC
Whistle and Slides, EDC
The Me Nobody Knows, Stephen Foster
Sense Relaxation, Bernar Gunther

Jim Higgins
one man band
home: 227-3377

Doug and Linda Lipman
musicians
4 Newsome Park
Jamaica Plain
524-6685

REFERENCE LIST - SCIENCE AND URBAN ECOLOGY

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SMITH, Howard, Hunting Big game in City Parks
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Note: The above books, with the exceptions of titles which are (*), are available in the Children's Museum Library. The Starred books are available in the Science Museum Library.

Structures

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