XVI. SAND AND WATER

Children at Play: The Sand and Water Activity Center

From the time they are toddlers, most children enjoy the sensations of playing with sand and water. In water, they love to splash, fill containers, pour from them, and float and sink objects. In sand, they enjoy digging, sifting, and burying. Combining sand and water allows children to mold, build, and tunnel.

In the classroom, young children should be able to explore the sensation of touching sand and water. First, they can do this without many accessories. Slowly, they can make their play more complex by using a few tools, such as two measuring cups and an eggbeater, or two dolls, washcloths, and a bar of soap. Older children who are more familiar with the tactile sensations of sand and water may use more complicated accessories, such as corks, sponges, soap, boats, and stones to explore the ideas of floating and sinking.

Regardless of their age, all children may choose to spend some time just feeling sand flow through their fingers or enjoying the touch of water as they move their hands in warm bubbles.

Impact on Developmental Areas

Sand and water play promotes growth and understanding in all developmental domains such as:

Mathematical Development

- Pouring similar amounts of sand or water into various containers and comparing which container holds more material (conservation of matter).
- Estimating how many bowls of snow it will take to fill a water table.
- Comparing the weight of wet sand with that of dry sand.

Scientific Development

- Using experimental inquiry and observation: "What will happen if I put bubbles in this water?"
- Making things change by adding water to dry sand, colors to water, or ice cubes to warm water.
- Classifying objects that sink and float.

Physical Development

- Using eye-hand coordination when copying designs, writing their names, or drawing symbolic pictures in wet sand.
- Mastering coordination of fingers and hands while pouring from one container to another or picking up slippery bars of soap.
- Building small muscle control using eye droppers to fill jars with different colors and adding water from a pitcher.

Development of Social and Cultural Skills

- Working cooperatively in a small group to plan joint activities and to play together.
- Negotiating who uses the favorite pitcher.
- Sharing materials that are added to the sand and water table.
- Acting out social roles, such as being the captain of the boat or washing the dishes from the family center.
- Building what they see in their own world or in books, such as bridges, tunnels, castles, and roads.

Emotional Development

- Helping comfort a child who is sad.
- Providing opportunities for success, such as filling all the ice cube trays or washing the doll clothes and hanging them up to dry.
- Solving problems through categorizing corks as "floaters" and rocks as "sinkers."

Setting Up the Sand and Water Activity Center

Each classroom should have a table that has a large container built into it that can be filled with either sand or water. Although this table can be used outside, it will generally be used inside the classroom. It should be placed in an area of the room where messy, and sometimes loud play, is appropriate and where the floor can be easily cleaned. Since the floor tends to get slippery from sand and water, pick a space that is not in the middle of traffic patterns so that children will not slip as they walk by. Also, as children take on social roles like mommy or construction worker, they often speak loudly, so it is best to keep the table away from the literacy center.

The tub should be filled with enough sand or water to encourage a variety of play activities. For young children, the water should be low enough for splashing and pouring. For older children, the water table can be filled to a depth of three to four inches in order to encourage more complicated play. The sand should be deep enough for digging and tunneling, but not so deep that it spills over the sides.

The sand and water table should be at waist height — a height that allows children to work comfortably. Some young children may need to stand on sturdy stools or on large wooden blocks in order to reach the table. If these are needed, place them on a surface that is not slippery and carefully supervise the children.

Water should be changed every two or three days to discourage the growth of bacteria. The table should not be covered at night. Sand should be clean and, if possible, fine-grained. The floor should be mopped after play and kept dry so children do not slip. Towels and a mop should be nearby to deal with accidental spills.

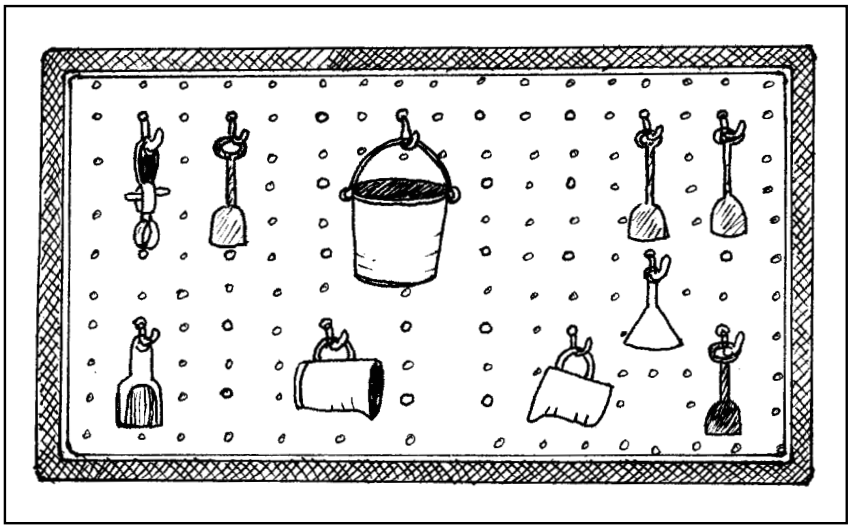
The sand and water table can hold other materials that encourage touch and exploration. These include sawdust, snow, fall leaves, acorns, large wood shavings, and ice cubes. Children can gather some of these materials outdoors, or the teachers can obtain them from lumber yards and construction sites.

Most of the play materials and accessories that you can add to the sand and water table can be found at home or be made by the teachers or by the children's family members. Some suggested accessories include:

Boats
Brushes
Buckets
Cookie cutters
Corks
Cups
Dishes & pots (from the family center)
Doll clothes
Dolls
Egg beaters
Empty cans
Eye droppers
Food coloring
Funnels
Measuring cups
Molds
Muffin and cake tins
Rocks
Scales
Shovels
Sifters
Small toys (trucks, cars, animals)
Soap
Sponges
Spoons
Sticks
Stones
Strainers, sieves, or colanders
Whisks

All materials should be on display, and children should choose the props they want to work with. Plastic tubs can hold some of the materials; others can be displayed on pegboards or nearby shelves. Materials can also be stored in bins

or trays under the sand and water table, and can be placed on an adjacent table each morning.



When children finish playing, they should place wet materials on a towel to dry. Sandy materials can be put on paper for the next children to play with. At the end of the day, the teacher should dry, clean, and put away materials.

The Teaching Team's Role

Teachers introduce materials and props into the sand and water area slowly. The teacher varies the materials, and observes which ones are being used by the children, and removes those that are no longer interesting.

The teaching team introduces materials to complement a theme or project that the class is exploring. For instance, if children are interested in bridges, the teacher helps the children collect rocks or branches to build bridges above the water. She brings in boats that float under the bridges. A sailboat that is too tall to fit under the bridge might start a conversation about drawbridges.

As teachers observe the children's play, they encourage the children to think about what they are doing and explore the attributes of the materials they are using. For instance, asking two children who are pouring to estimate how many tea cups filled with water will fill a pitcher, may promote a discussion of the difference between size and volume. Teachers help expand dramatic play by asking a child to describe what she is planning to make for dinner with the delicious sand she is playing with. Teachers' questions will prompt children to

solve problems and generate hypotheses. For instance, a teacher can ask, "What will happen if you add red coloring to the water?" The next questions could be, "What did happen?" and, "Why do you think that happened?" This sequence models the scientific process. Children will begin to do this on their own and in small groups.

Children should feel free to explore sand and water without worrying about making a mess. Teachers should have plastic smocks available for the children and should watch for spills. By having a mop and towel handy, a child can help clean up without feeling bad about spilling.

Activities and Projects

Outdoor Activities

Giant Bubbles. Do this activity on a warm day when you take the water table outside. Use one cup of dish washing detergent to one gallon of water. Let the children dip rounded coat hangers or string tied into circles into the bubble solution, and carefully lift their circles out of the tub. A large bubble will cling to the shape. It can be blown or shaken free.

Invisible Painting. Children love to use water and large brushes to paint bricks, wood, buildings, floors, and paper. When the water dries, it becomes invisible.

Mud Pies. Filling molds, buckets, muffin tins, and other containers with very wet sand and unmolding them onto newspaper or plastic is messy but fun to do outdoors. Children enjoy cooking pretend mud meals that they can serve at a dinner party on the playground.

Dams, Tunnels, and Bridges. Using a piece of hose or plastic tubing as a siphon, children can let water flow from the water table to the ground. As the water nears bridges or rock dams that they built, children can anticipate what will happen. They will see the water being stopped by the dam (temporarily) and will see it pass under the bridge.

Rain. Build a terrarium and have the children observe the water cycle. Discuss processes such as condensation and evaporation.

Indoor Activities

Washing Art Materials. Children will see cleaning art materials as fun. They can use soap and a scrubber in the water table to wash brushes, rolling pins, cookie cutters, and other equipment.

Learning Geography. Sand and water can be used to make land forms. Older children marvel as a sand mountain disappears when water is poured on it. They find it leaves only the peak, which becomes an island or a peninsula. Using water, sand, shells, coral, and toy fish, they can create underwater worlds that duplicate the floor of the sea.

Sand Paintings. Using glue, children can draw a design, letter, or name on a piece of cardboard. While the glue is still wet, the child can sprinkle it with sand. When this dries, the sand adheres to the glue, making a rough-textured drawing.

Regatta. Children can build boats with twigs and sails from string and paper or cloth. They can then take turns blowing their boats across the water table.

Sink and Float. Provide a box of materials, including paper clips, rocks, marbles, cork, sticks, and sponges. Let the children guess which objects will sink and which will float. Let them try all the objects. They will discover that heavy objects sink while lighter ones float.

Dissolving Substances. Compare salt, sugar, flour, tapioca, rocks, sticks, screws, soda, and gelatin. Have the children make a graph that depicts which materials dissolve and which do not.

Making Paper - A Project For The Water Table

Making paper can be a joyful activity for young children. A water table works nicely for this activity. You will also need a handmade mold made from window screening.

The first step is to tear up old paper into small pieces. Old newspapers and scraps of construction or white paper work well. Do not use treated paper, such as waxed paper.

Place the torn fragments of paper (very small pieces) in a pail or bucket of water. Cover the bucket and soak the pieces for about three days.

Rinse the wet paper in clear water. If the classroom has a blender, place the wet paper into the blender. This will make it even more "mushy." If there is not a blender, the wet paper as is will do fine. The wet paper is called pulp or slurry.

Place the paper pulp in the water table. Dip a screened mold or frame in the pulp and water mixture. When the children lift up the frame, they should have a surface of wet paper pulp on top of the frame. Allow the water to drain through the screening into the water table.

When water is drained, have children carry the frame over to a table and blot the pulp down onto a towel. Let the pulp dry for a day. Then children will have their own paper piece to decorate or draw on.

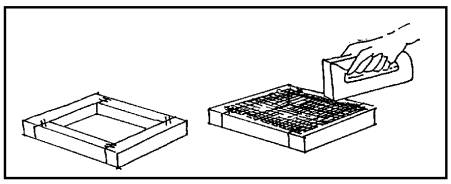
To make textured paper, the children can add threads, small seeds and broken leaves to the pulp in the water table.

Directions for Making the Screened Frame

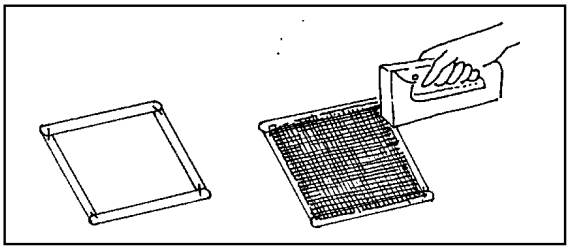
1. Buy square wooden molding; 3/4 inch will do very well.

2. Cut wood into lengths that will make a 6 or 7 inch frame. Nail or staple the frame together.

3. Staple screening over the top of the wooden frame For smoother and safer edges, cover each edge with tape.



4. As an alternative, staple tongue depressors together to make a simple frame. Just follow the directions described in #1.



Ideas For Paper Art

Place thread, glitter, strings on the wet paper. Press in.

Press leaves and small sticks into wet paper.

Press cutouts made from paper into wet paper.

Place another piece of paper on top of the wet paper. This is called couching and works well if you want to put a raised object in between.

For color, add food coloring to the pulp in the blender (1/2 tsp. coloring to 1 cup water) or add acrylic paint (1/4 tsp. to 1 cup water).

Mix paint and water and put into squeeze bottles. Decorate wet paper as you would a cake.

SCIENCE