Engineering:

Construction Zone: Building a Paper Bridge

LEARNING GUIDELINES

PreK-LS1-4: Use their five senses in their exploration and play to gather information.

Children have an opportunity to practice their engineering skills while they design and build bridges made out of paper. This activity gives children the opportunity to imagine a bridge, create a bridge, and recreate it if it doesn't work.

MATERIALS

- **Paper: 8½" x 11" sheets cut into thirds widthwise to make 8½" x 3 ½" strips**
- **Empty storage containers or small buckets that are less than 8" across the top**
- **Small weights, such as plastic animals, dice, or small magnets**

SETUP

- The goal of this activity is for children to create a bridge from one side of a container to the other that will support at least one of the weights.
- Set up a clear area on the floor or a table with the paper strips and buckets out. The weights can be on the side in a container.

DO IT TOGETHER

- Start your child off with one paper strip and ask him to see if he can use it to create a bridge across two containers. "Now choose a weight to put on your bridge. What happens?" If the bridge collapses, you can suggest that he experiment with other weights or try rebuilding the bridge. "Why do you think the bridge fell? What could you do differently?"
- If your child is having trouble creating a bridge, suggest modifications such as folding, crumpling, tearing, or ripping the paper. "Would drawing on the paper make a difference in the structure?"
- Encourage your child to understand that lots of different kinds of bridges will work, and there is no one right way to do this activity. Have him think about bridges he has seen or driven over. "Do you remember what the bridges look like? What shapes did you see in them? Do you have a favorite bridge?"
- For your very young child, it's fine if he just wants to crumple the paper or play with the animals. You could set up a little bridge and help him move the animals back and forth over and under it.
- For your older child, once he has completed a weight-bearing bridge, challenge him to build a bridge with certain attributes, such as one that has an arch or railings or that can hold more weight.

DO MORE OF IT!

- **Try It Out.** Try making other types of bridges using materials from around your home and yard, such as twigs, string, tinfoil, or rocks. Explore your recycle bin as well for larger building materials. What ideas can your child come up with, and how can you help him design and build them? When you and your child have got a bridge built, encourage him to try getting different objects (toy vehicles, people, or animals) to stand on or cross the bridge. Talk with your child about what works and what doesn't, and why.
- **Bridges Everywhere.** Point out bridges as you walk or drive around with your child. Talk about the experience of building your own bridges. Share observations about how the bridges you see are made, how they are shaped, how long they are, and how they stay up. Notice who or what is traveling on them—for example, footbridges, train bridges, highway bridges. You can also encourage your child to go back to the original bridge-building activity and see how much more he can do.

BOOKS

- *A Day in the Life of a Builder* by Linda Hayward
- *The Three Little Javelinas* by Susan Lowell

OTHER RESOURCES

- Visit your local library.
- Visit your local museum, nature center, zoo, or aquarium.
- Check out Brain Building Zones for local events in Massachusetts at http://brainbuildinginprogress.org/event-calendar.
- Check out www.resourcesforearlylearning.org and www.peepandthebigwideworld.org.
- Paper Tower: A Family Science Activity
http://www-tc.pbskids.org/zoom/printables/activities/pdfs/newspapertower.pdf