



Invent on the Spot

Overview

Students will design a device to solve a problem. They will hypothesize, conduct experiments, and test their inventions based on observations.

Illinois State Goals

Science Goal 11: Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments, and solve problems.

Science Goal 12: Understand the fundamental concepts, principals and interconnections of the life, physical and earth sciences.

Language Arts Goal 4: Listen and speak effectively in a variety of situations.

Vocabulary

- Invention
- Hypothesis
- Observation

Materials (one complete set per cooperative group)

- Clear plastic or glass containers that have large enough holes to fit a super ball, but small enough that a student's hand will not fit. This is the “drain pipe.”
- Bottles of water (liquid should not fill more than half of container above). This is the “juice.”
- Superball
- “Junk”: An assortment of pipe cleaners, paper clips, clothespins, popsicle sticks, string, twist ties, clothespins, and/or other materials as you see fit.
- Paper and pencils for data recording

Procedure

1. Give a container and a bottle of liquid to each group of students.
2. Explain the following scenario to the class: *Your mom sent you to the store to get some juice. Because you were kind enough to do this favor, she gave you some money to buy a toy. You're walking home from the store with the juice and bouncing your brand new superball when it suddenly disappears into a drain pipe! (Drop the balls into the "pipe".) You can see the ball but can't fit your hand through to reach it - what do you do? You look around to see if you can find anything useful to you.*
3. Hand out the “junk”.
4. Rules: You may use or combine these materials in any way to help you solve your problem. You may not move the drain pipe in any way. You may use anything you happen to have in your pocket.. If something falls in the drain pipe, it is stuck there. If someone asks, yes, they may use the "juice" to help retrieve their superball.
5. Have the students record what worked and what didn't.
6. Discuss with the students:
 - *Have you been in a situation similar to this one? What did you do?*
 - *How did you remove the superball? What materials did you use?*
 - *What materials did you find useless? Did someone else use them?*
 - *Did you use the materials in a way different from their common use?*

Extension

Anytime Inventions

Put together a tub of “junk,” including tubes, clamps, cardboard, funnels, rope, tools, boxes, pulleys, etc. for your students to invent their own contraptions.

Copyright Chicago Children's Museum 2008