



The Dizzy Bunny Teacher Workshop

(Lower Elementary Level)

Students learn about force, motion and air resistance by constructing and experimenting with a “dizzy bunny.”

(Time required: 45 minutes)

Purpose: Students conduct a controlled experiment to determine how certain factors affect the fall of a paper bunny.

1996 National Science Standards: Content Standards B and E (K-4)

1995 Virginia Science S.O.L.s: K.1, K.4, 1.1, 1.2, 2.1, 3.1

Materials:

Per Student

scissors
bunny pattern to cut out
paper clips
cotton balls (optional)

Per Class

7 cut-out paper bunnies
(prepared as described on the bunny pattern sheet)
paper clips
prediction chart
(prepared as described on attached sheet.)
markers for chart (one for each student)

(Note: The bunnies will spin better from a height of at least six feet, so you may want to provide a stable platform above ground level.)

Prerequisite Skills and Knowledge:

Discuss the properties of air with the class.

(Younger students may not cut out the shapes as well as older students. If this is the case, as part of procedure Step 4, you might want to discuss how different shapes might change the bunny’s spinning potential. For example, what would happen if the bunny had very short ears?)

Procedure:

1. Hold up a paper bunny (cut out, but not folded).
2. Ask the students to predict what will happen when the bunny is released. Let go of the bunny. Have the students describe what they observe. Compare the observations with their predictions.
3. Fold the bunny's right ear forward and the left one backward. Repeat the prediction/observation exercise (as in Step 2).
4. Discuss the changes to the bunny between drop number 1 and drop number 2. Have the children make hypotheses about why the bunny behaved differently.
5. Discuss some different ways the bunnies could be changed. (For example, type of paper, added weight, shorter ears, folding the left ear forward and the right one backward, etc.)
6. Give students the opportunity to make their own bunnies and experiment with various changes.
7. Bring out the prediction chart with the previously prepared bunnies. Explain that the bunnies have been changed in the following ways:
 - A. Cut, but not folded or changed in any way
(This is the "control bunny.")
 - B. Paper clip attached to the bottom
 - C. No changes to the bunny (Blow on it as it falls.)
 - D. Paper clip attached to the bottom, one ear bent forward and the other backward
 - E. Paper clip attached to the bottom and both ears bent forward
8. Have each student predict which change will make the bunny spin the fastest by placing a marker in the appropriate chart section.
9. Discuss the student predictions.
10. Use the seventh bunny cut-out to test each of the changes shown on the chart.

Conclusion:

Have the students compare the results with their predictions.



Extensions:

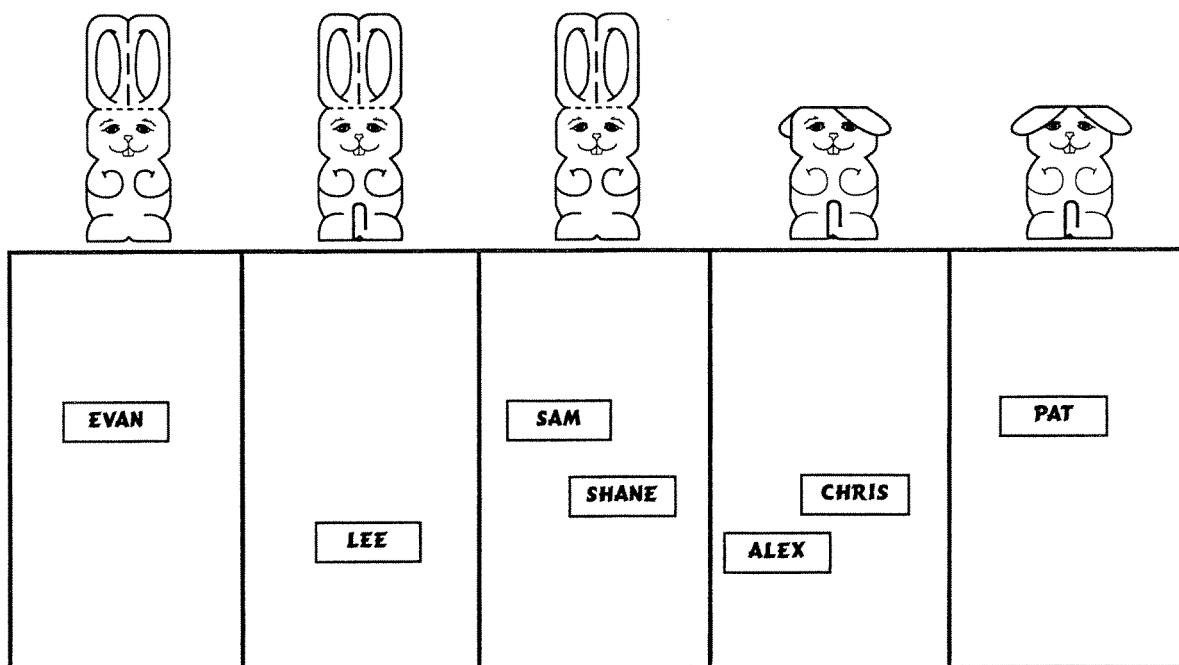
1. Try adding a cotton “bunny tail” to the bunny cut-out. Have the students predict how this will affect the bunny’s fall and then test their hypotheses. Follow with a discussion of how the air affects different materials and shapes as objects fall.
2. Older children may take the experiment a step further by conducting a series of performance trials. Make a bunny with the right ear bent forward and the left ear bent backward. Drop the bunny and time its fall with a stopwatch. Record the result. Add a paper clip to the bunny and — from exactly the same height as before — drop the bunny again. Time the fall and record the result. Repeat the process 10 times, adding a paper clip for each trial. Graph the results. Using the graph, predict how many seconds a bunny with 20 paper clips will take to reach the ground.

Table for Bunny Extension 2

Number of Paper Clips	Time of Fall in Seconds

How to Prepare the Prediction Chart

1. Cut out 7 bunnies using the pattern on the next page. You will use 5 for the examples attached to the prediction chart and 2 for demonstration purposes.
2. Prepare the bunnies according to the following criteria:
 - A. Cut out, but not folded or changed in any way.
 - B. Paper clip attached to bottom
 - C. No changes to the bunny (It will be blown on as it falls.)
 - D. Paper clip attached to the bottom, one ear bent forward and the other backward
 - E. Paper clip attached to the bottom and both ears bent forward
3. Attach the 5 prepared bunnies to the top of the chart, as pictured.



Which Bunny Will Spin the Fastest?

4. Make paper markers for the class to put on the chart (see diagram). Make the markers large enough to allow each student to write his or her name on one.
5. Ask the students which bunny they think will spin the fastest. Each student should place his marker under the bunny he or she thinks will be the dizziest.



