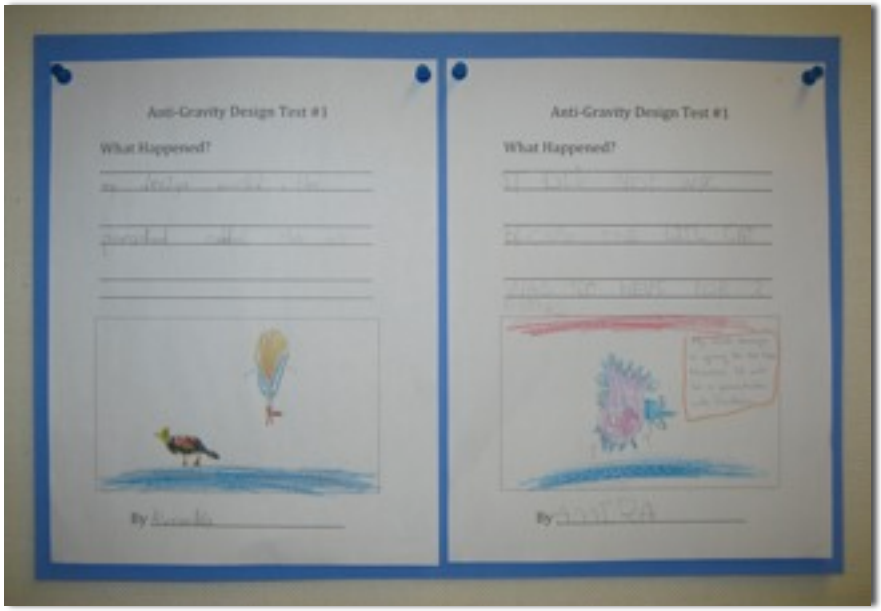
TRYING TO DEFY GRAVITY IN THE SK!

After trying a few experiments to see how gravity works, the SKs created a challenge for themselves:

If gravity is always pulling objects down, could they design something that would slow the rate at which a plastic animal fell?

The SKs began by choosing one of the small plastic animals in the class. Then they made what we called an "anti-gravity" design on paper before actually making them for real.

Their designs fell into three basic categories...



We tested each design by dropping them at the same time as a small plastic rooster. If the design succeeded, it hit the ground after the rooster, proving it fell more slowly. If the design didn't work, it hit the ground at the same as the rooster.

Alexandra writes above that her design worked because her "parachute catched the air". You can see the rooster is already on the ground while her fox is still falling.

Amira writes that her design did not work "because the little cat was too heavy for 3 feathers. She also writes that "my next design will be like Nicola's. It will be a parachute with feathers."

FEATHERS Feathers were a common feature on many designs. Some children thought feathers might make a plastic animal lighter. Others thought that If feathers help birds defy gravity, they would be helpful for this challenge.

PARACHUTES A number of children thought about creating parachutes out of different kinds of paper or fabric, attaching them to their chosen animal with strings or tape.

"WING" SPANS A few children created long, narrow strips out of paper or taped feathers. They were imagining how the wings of a bird look, and tried to recreate that shape.

COLE'S DAD RION CAME IN TO EXPLAIN WHY SOME DESIGNS WORKED AND OTHERS DIDN'T - ANYONE WHO HAS FLOWN GLIDERS KNOWS A LOT ABOUT DEFYING GRAVITY! - AND HE GAVE US SOME EXPERT ADVICE.

Resistance!

Rion explained that resistance occurs when forces pull in opposite directions. Feathers don't create enough resistance against gravity to slow heavy things down.

Harrison and Rion demonstrate resistance by pulling in opposite directions.

Parachutes create resistance by trapping air. The trapped air made it harder for Avery to pull this parachute from side to side. You can see (and we could hear) the air get caught!

RION SUGGESTED WE CONSIDER USING A SQUARE WHEN MAKING A PARACHUTE. WHEN STRINGS ARE ATTACHED IT CREATES A BOWL SHAPE - PERFECT FOR CATCHING AIR!

Weight Counts!

The heavier the object, the harder resistance needs to work to slow it down.

Colin's design worked when he switched the big, heavy bear for a small, light zebra.

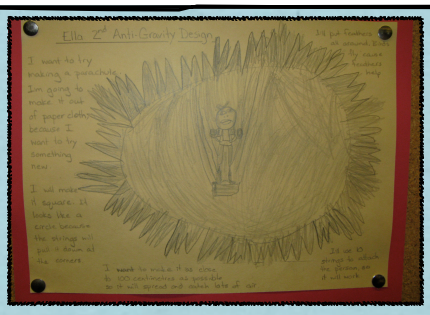
Surface Area!

Using bigger pieces of plastic, paper or fabric increases the amount of air that can be trapped.

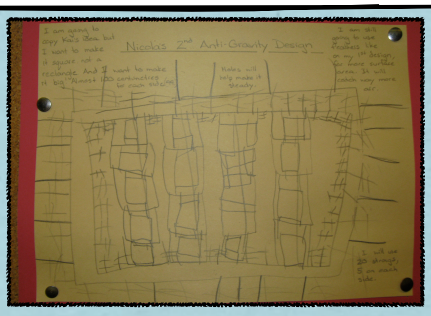
Feathers on their own do not have a large surface area.

But lots of feathers can help increase surface area.

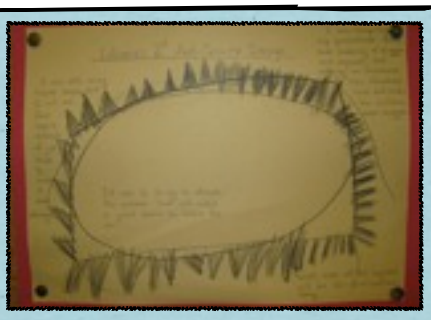
Large winglike spans are also good at trapping lots of air.



ELLA'S NEW DESIGN: I will make my parachute square, It looks like a circle because the strings will pull it down at the corners. I want to make it as close to 100 cm as possible so it will spread and catch lots of air.



NICOLA'S NEW DESIGN: I want to copy Kai's idea but make it square not a rectangle. I am still going to use feathers like on my first design, for more surface area. It will catch more air that way.



LILLIANA'S IMPROVED DESIGN: I am keeping my parachute idea but making it bigger and square. And adding feather's like Nicola's. I'll use 6 strings to attach the (plastic) person. That will make a good bowl to catch the air.