Force and Motion - Grades K-2

Nebraska Science Standards
2.2.2 Students will compare relative position and motion of objects
2.2.2.a State location and/or motion relative to another object or its surroundings (in front of, behind, between, over, under, faster, slower, forward and backward, up and down)
2.2.2.b Describe how objects move in many different ways (straight, zigzag, round and round, back and forth, and fast and slow)

Objective: Students will demonstrate relative position and motion of objects. Students will explore how objects move in different ways and demonstrate gravity and air resistance by making a parachute.

Materials:

Provided by CSM:

Demonstration

- Slinky

Parachutes

- Plastic or paper cups
- Tissue paper
- String
- Tape
- Single hole punch
- Pennies

Discussion:

What is motion?

- Motion is just another way of saying movement. Each type of motion is controlled by a different type of force
- See if the students can name some examples of how objects move. Have them demonstrate
    - Ex: Straight, zigzag, round and round, back and forth, and fast and slow

What is gravity?

- Gravity is the force that attracts a body toward the center of the earth, or toward any other physical body having mass
    - This is why things fall to the ground
- Can you name some things that defy gravity? In other words, what are some things that dont fall to the ground?
    - Ex: airplanes, birds, hot air balloons
    - Explain each reason why -- airplanes and birds have wings that increase their surface area (explain what is surface area) --this combined with their speed keeps them up. Hot air balloons stay up since hot air is very active and rises

What is air resistance?

- Air resistance is the force of air pushing against a moving object.

Activity:

Making a Parachute

Set up:

Hole punch each up in 4 spots. Pass out the following supplies to each child: cup, 4 strings, tissue paper. Students can work in groups, ensure each group has tape. Explain to them they can use as much string and tissue paper as they want to design their parachute.

Procedure:

1. Children will work together and with the volunteers to engineer a successful parachute.
2. Test each parachute and work out improvements
3. Once the children have made a successful parachute (meaning it glides down and doesn't fall down) have them blow on it as it's falling down
    - How does this affect its motion?
4. Give them a penny to put in their cup
    - Ask them what happens, and why does this happen?
    - See if they can improve on their design, if applicable

What is happening?

The cup glides slowly down thanks to something known as air resistance (or drag). When air gets under it, the plastic parachute fans out for maximum coverage; this air resistance slows the fall of the object tremendously.