Consult 4 Kids Lesson Plans

Component	Science
Grade Level:	K-5
Lesson Title:	Crispy Chips
Focus:	The American Story

Materials: Several types of chips, paper towels, tracking form with headings of Size, Shape, Type, Flavor, Taste, Texture, and pencils

Opening

State the Objective

The objective of this lesson is to test potato chips' crispness based on size, shape, type, flavor, taste, and texture. Potato chips capture the student's attention, so learning becomes a good time for all.

Gain prior knowledge by asking students, "What do you know about _____?"

Potato chips are an example of a tasty mistake. The potato chip was invented in 1853 in Saratoga Springs, New York, by accident. George Crum was the chef who worked in a popular vacation spot for wealthy people. One day a customer sent back his plate of potatoes several times. He kept asking that the potatoes be cut thinner and fried longer. Crum had a bad temper, and decided to get even with the customer. He sliced the potatoes very thin, fried them until they were crisp, and salted them. He was sure the guest would hate them. Much to everyone's surprise, the customer was very happy and asked for more. The news spread fast about these crispy potatoes. Until the 1900's they were known as Saratoga chips, named after the town where they were introduced. Today, potato chips are America's number one snack food.

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")	*Activity → Teachable Moment(s) *throughout*
1. Purchase or have students bring several different kinds of chips. Include chips with different shapes, textures, flavors and different types. Include corn, tortilla and puffed chips. Choose several different flavors of each. 2. Prepare a tracking form with headings on size, shape, type, flavor, taste and texture. Students will list each chip and rate chips according to the criteria. 3. Set the control for the test. The control will be a basic chip with no extras, such as flavor or ridges. 4. When finished with the activity, have the children conclude what aspects of the chip impacted the crispness, such as flavoring, size, shape and type.	Tip: Teachers, listen for questions that begin with "what" or "how." • Student: "Have you ever eaten sweet potato fries?" • Teacher: "What is different about sweet potato fries?"
Students Practice ("You Do")	
1. Conduct the test. Have each child taste the control chip. Note: To taste, does not mean to eat the whole chip. Then each child will taste the other chips and rate them on their Tracking Form. 2. Provide time for drinks of water after the test. Students will be thirsty.	

3. Share the findings as a class. Which chips were the most crispy?	

Closing
Review First we learned how potato chips were invented. Then we tasted the control chip. Next we tasted the other chips and marked on the paper if they were crisp or not. Finally, we decided which chips were the most crispy.
Debrief **Partner Debrief:** Turn to your partner. Alternate asking debriefing questions of each other. Ask, "What did you like best about this activity? What didn't you like about this activity? What would you like to add to this activity to make it better?"

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "This lesson can be enjoyed by all ages. A few students were more interested in tasting rather than gathering data. It is possible to tweak the lesson to fit your group. We did not include corn chips or puffed crisps, but you certainly could add them to the assortment."

Your Reflection:

Modification of lesson:

For younger students, create a simplified tracking form or have them use their white boards. Reduce the choices of chips to test.

For fun, tell kids about a potato who has decided to exercise. Draw the potato before he begins his exercise program. Then draw the potato after exercising. He now has become a potato chip! This can be a follow-up activity during clean-up.

Consult 4 Kids Lesson Plans

Component	Science
Grade Level:	K-5
Lesson Title:	Float Like a Boat
Focus:	The American Story

Materials:
Paper clips, dish detergent, clear glass pan or bowl, water, newspaper

Opening

State the Objective

Today we are going to observe what happens when we float a paper clip on "water skin" (surface tension).

Surface tension is caused by the attraction of water molecules to each other, just as a magnet is attracted to metal. A molecule is a single part of something that goes into making a completed whole. Think of a house being built brick by brick. Each brick (molecule) helps make a whole house. Water has its own skin (surface tension). This "skin" allows water to do many things. Surface tension (water skin) can be broken.

The American Story Theme continues with students engaged in hands-on activities. Students learn best by experimentation and working as a team to find solutions.

Gain prior knowledge by asking students, "What do you know about _____?"

1. Let's review. "What is "water skin" or surface tension? (The attraction of water molecules to each other.)
2. Name a few items that will float on water: ping pong balls, plastic, light pieces of wood, cork, wire mesh, aluminum foil and rubber bands.

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Ask, "Will we be able to float a paper clip on top of water?"
2. Predict what will happen when we add a drop of dish detergent to the water."
3. 3. Demonstrate the activity for the whole group.

Students Practice ("You do")

1. Provide partner-pairs with materials. You will need clean hands, and a clean paper clip.
2. Cover the workspace with newspaper.
3. Place a pan of water on the newspaper.
4. Carefully bend the inside of the paper clip upward. Make a flat boat. Otherwise the uneven boat will break the water skin.
5. Hold your breath so you can hold the paper clip boat steady. Push the paper clip boat gently straight down on the water surface. You may need to adjust the paper

Activity → Teachable Moment(s) *throughout

Tip: Listen for questions that begin with "what" or "how."

Student: "What caused the paper clip boat to sink?"

Teacher: "Students, how can we find the answer?"

clip and try the activity a few times. 6. Dip one tiny part of another paper clip in the dish detergent. 7. At the other end of the pan, barely touch the paper clip with the dish detergent into the water. 8. Wait and watch. In a second, the paper clip boat will sink. When soap is added to the water, the paper clip falls into the hole on the surface "cut" by the detergent.	

Closing

Review

Say, "Let's review what we did today. First we bent a paper clip to make a flat bottom boat. Then we carefully placed the paper clip on top of the water. Next, we added a tiny amount of dish detergent to the water. Finally, the paper clip sank through the hole in the water skin."

Debrief

Three Step Debrief

Step 1: Describe: Students describe what they did during the activity.
Step 2: Interpret
a) What were you key learning's when you participated in the activity?
b) What skills did you need to utilize to participate in this activity?
c) How did you feel when participating in this activity?
Step 3: Generalize: How can you use the skills or your key learning's in your life?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "A few students still don't get the idea of dish detergent making a hole in the surface tension of water. I think we need another lesson about surface tension."

Reflection:

Modification of Lesson:

Younger students need help adjusting the paper clip so it will float.

Consult 4 Kids Lesson Plans

Component	Science
Grade Level:	K-5
Lesson Title:	Graham Cracker Earthquake
Focus:	The American Story

Materials:
One half of a graham cracker (one cracker with a perforated line down the middle) for each student.

Opening

State the Objective

This activity will show the forces that can create earthquakes. It also will show the tension that can build up before a quake and debris created along a fault.

Gain prior knowledge by asking students, "What do you know about _____?"

The Earth's top layer is like a giant jigsaw puzzle. It is formed of giant "plates" that are always moving. The plates move slowly, a little faster than your fingernails grow. Sometimes the plates get stuck. Pressure and tension build up. When plates move side by side, the rubbing together makes vibrations. These vibrations are earthquakes. In a big earthquake, the plates move violently past each other.

Earthquakes happen all over the world and in every state. The places where the plates meet and grind against each other are where there are the most earthquakes. These places are called faults, or fractures between rocks. Some faults are small; others continue for many miles. Engineers are working to help people in these areas be safe.

Earthquakes are a definite part of the American Story.

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")	*Activity → Teachable Moment(s) *throughout*
1. Talk about earthquakes. Ask if students have felt an earthquake. 2. Discuss safety during and after an earthquake. 3. If the internet is available, access usgs.gov. Look for an interactive map that shows where earthquakes are happening now in your area. 4. Talk about the graham cracker representing the Earth's plates. 5. Discuss the difference between plates moving side by side and an uneven break at a fault line. Which break creates larger earthquakes? 6. What is the meaning of the word "debris?" (rubble, something broken up) 7. What kinds of debris would be left after an earthquake?	Tip: Teachers, listen for questions that begin with "what" or "how." • Student: "What is a tsunami?" • Teacher: "How do you know about tsunamis?"
Students Practice ("You Do") 1. Break the graham cracker along the perforation. 2. Place the two pieces back together so they touch.	

3. Move one piece away from you and one piece toward you keeping the edges touching. 4. Observe the tiny crumbs that form as they move side by side. These represent rocks breaking off the edges of two places along a fault. 5. Now break one of the halves into two pieces. Notice that the edge is not smooth like the first two pieces you made. 6. Put the broken edges back together like you did with the first break. 7. Move one piece away from you and one toward you with the broken edges touching. 8. Notice that the two do not move as easily this time. This is the tension that builds up along a fault before an earthquake. 9. Keep moving the halves until they move. Notice the large pieces that break off. This represents a very much larger destructive earthquake.	

Closing
Review First we talked about earthquakes. Then we did this cool activity with graham crackers. We learned what the word debris means. There was a lot of debris, or crumbs, after the activity. Finally we each got a graham cracker to eat.
Debrief **Partner Debrief** Turn to your partner. Alternate asking debriefing questions of each other. Ask, "What did you like best about this activity? What didn't you like about this activity? What would you like to add to this activity to make it better?"

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "Even though this activity was simple, the point really got across to the kids about the Earth's plates building up pressure and tension."

Your Reflection:

Consult 4 Kids Lesson Plans

Component	Science
Grade Level:	K-5
Lesson Title:	It's in the Mix
Focus:	The American Dream

Materials:
Materials needed for each group: 3 large (12-16 oz) clear plastic cups, ¾ full of water, 1 plastic teaspoon, salt, powdered milk, cup of sand, newspaper to cover the work area

Opening

State the Objective

Today we are going to explore the differences between mixtures, suspensions and solutions.

Gain prior knowledge by asking students, "What do you know about _____?"

Many substances we see are mixtures of different materials. I mixtures, you can physically see the different components. For example, sand in water. In solutions, the different components are completely dissolved, like salt water. In suspensions, solid particles are spread evenly but remain solid, like milk. Given enough time, the different components in a suspension will separate by gravity.

Scientists have a quest for knowledge. The average person seeks answers to questions as well. In this lesson common everyday substances are defined and explained. Increasing our knowledge about mixtures, suspensions and solutions helps us understand more about our world. Thus, we are living the American Dream.

1. Ask, "What is a mixture?" (A mixture is a substance made from two or more materials mixed together.) Give examples: cookie dough, cake mix, sand and water.
2. "What is a suspension?" Cornstarch and water
3. "What is a solution?" Salt and water. Can we separate the parts of the solution?" (Yes, by evaporation)

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Make predictions about what will happen when sand and water are mixed.
2. Make predictions about what will happen when powdered milk and water are mixed.
3. Make a prediction about what will happen when salt and water are mixed.
4. Demonstrate the activity for the whole group. See directions below. Use student helpers.

Students Practice ("You do")

1. Divide students into small groups. Review directions for the activity.
2. Stir a teaspoon of sand into a cup of water.
3. What happens as soon as the student stops stirring? (The sand separates.)

Activity → Teachable Moment(s) *throughout

Tip: Listen for questions that begin with "what" or "how."

Student: "What is powdered milk?"
Teacher: "Students, what do you think is in powdered milk?" (Milk solids with the water removed)

4. Stir a teaspoonful of powdered milk into a cup of water. What happens? (The little milk particles are floating.) 5. Ask a student to stir a teaspoonful of salt into the third cup of water. What happens? (The water is hazy at first, but will become clear.) 6. Label each cup with mixture, suspension and solution.	

Closing

Review

Say, "Let's review what we did today. First we mixed sand and water. Then we mixed powdered milk and water. Finally we mixed salt and water."

Debrief

The teacher will ask the following three questions. Students tell their partner-pair the answer.

1. What is a mixture? What is a solution?
2. What didn't you like about mixing the sand, powdered milk and salt?
3. How would you change the activity to make it better next time?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "I tweaked the lesson by using cornstarch, instead of powdered milk. It worked okay and formed a suspension."

Reflection:

Modification of Lesson

For younger students, have adult help to supervise each group.

Consult 4 Kids Lesson Plans

Component	Science
Grade Level:	K-5
Lesson Title:	Paper Airplanes
Focus:	The American Story

Materials: Tough lightweight paper (copy paper works well), "How to Fold a Paper Airplane" Directions. The simple dart-type airplane is a good place to begin.

Opening

State the Objective

The objectives are to learn to fold a paper airplane, fly the plane, and determine if the number of folds affect the distance a paper airplane will fly.

Gain prior knowledge by asking students, "What do you know about _____?"

For a hundred years, people have folded paper into a simple dart to make paper airplanes. Mankind has become more creative over the years, creating planes using origami paper-folding techniques. Thus, the American Story continues with kids and adults having fun with paper airplanes.

Why do we use paper? Paper makes a good wing because it is impermeable to air. In a single sheet of paper, multiple layers of interlocked fibers prevent it from flowing through. In contrast, a hole-filled screen from a back door would not make a very good wing.

After the initial throw, paper planes are gliders powered by gravity. As the plane falls, its wings deflect air backward and down, providing thrust and lift.

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")	***Activity → Teachable Moment(s) *throughout***
1. Here are some tips for making paper airplanes: ▪ Crisp folds—Make a firm finger-press ▪ Symmetry--Be sure one side is exactly like the other ▪ Control the Surfaces--Double check ▪ Paper Choice--Tough, lightweight paper ▪ Make fresh planes--Old ones lose strength ▪ Practice, practice, practice 2. Demonstrate the folding for the whole class. When it is their turn, model each step with them as you go. It would be helpful to download illustrations of each step rather than relying on the written directions in this lesson, unless you are an expert paper airplane maker!	Tip: Teachers, listen for questions that begin with "what" or "how." • Student: "How would I make a paper helicopter?" • Teacher: "What shall we do to find out?"
Students Practice ("You Do") 1. Fold a sheet of paper in half lengthwise (Like a hot dog).	

2. Fold the top corners down to the center fold. 3. Fold the tip down. 4. Fold about one inch of the tip up: unfold 5. Fold the top corners down to the center fold so that the corners meet above the fold in the top. Note: The nose of the plane should be blunt. 6. Fold the tip up. 7. Fold the entire plane in half so that the tip is on the outside. 8. Fold the wings down. 9. Trim and fly. (Give a gentle toss forward. If the nose drops and the plane dives into the ground, bend up the back of the wings. A little bend goes a long way. If the nose rises first and then drops, the plane is stalling. Bend down the back of the wing. Keep your adjustments small.)	

Closing
Review First we talked about paper airplanes. Then we worked together to fold a paper airplane, one step at a time. Next we practiced flying our planes. We made other planes with just one, two, up to 6 folds and measured which planes flew the furthest. Finally, we talked about what we learned.
Debrief **Likes and Dislikes** Create a chart and list what students liked and what students didn't like about the activity. You might probe by asking, "What about this activity . . ."

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "It was difficult for kids to get the idea of making a crisp fold and keeping the folds symmetrical. They wanted to rush through the activity."

Your Reflection:

Modification of lesson:

For younger students, modify the lesson by preparing a few airplanes ahead of time, and/or ask them to fold only Steps 1-3. For older students, challenge them to create other types of paper airplanes. Directions can be downloaded from the internet. Measure the distance each plane flies with one, two, three, four, five, or 6 folds.

Consult 4 Kids Lesson Plans

Component:	Science
Grade Level:	K-5
Lesson Title:	Paper Plate Hovercraft
Focus:	The American Story

Materials: Paper or Styrofoam bowls or plates (CD's, or any plastic lids from a can or tub of a product can be used), balloons, pencil, pipe cleaners (maybe), and scissors.

Opening

State the Objective

The objective is to challenge students to create a vehicle of the future.

Gain prior knowledge by asking students, "What do you know about _____?"

The American Story Theme reflects our desire as a people to be creative. Learning to design your own hovercraft, from simple to more complex, is a way to pursue creativity and fun.

When air flows out of the balloon, it goes under the paper plate and creates a layer of air space that keeps the Hovercraft and the smooth, flat surface from rubbing against each other. Without rubbing, there is no friction, which causes an object to slow down when moving or to hold in place. Therefore, the air layer from the balloon creates a buffer, allowing your Hovercraft to glide across the surface, free from the friction that would have held it in place.

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Ask students the meaning of the word "hover." (float, drift, soar, fly)
2. Talk about "a layer of air space." Students place their hands just above the table to create an air space.
3. Talk about friction. Ask students to rub their hands together to create friction and heat. How does friction slow down a water or land craft? Is there friction when a spacecraft travels through the atmosphere? (Yes)
4. Talk about the benefits and uses of hovercraft in real life: travels the same speed over land and sea, military uses, specialized transports, can transport people and equipment, faster than most boats, and cost effective.
5. Demonstrate how to make the hovercraft for the whole class. See below.

Students Practice ("You Do")

1. Students work in small groups or with a partner.
2. Provide materials to each group.
3. Decorate the plate with crayons or markers.
4. Stick a pencil through the center of the paper plate.
5. Use scissors to make the hole a little bigger.

Activity → Teachable Moment(s) *throughout

Tip: Teachers, listen for questions that begin with "what" or "how."

- Student: "How do you get the paper plate to hover longer?"
- Teacher: "What do you think we should try?"

6. Stick the balloon through the hole with the opening on the underside. 7. Blow up the balloon. 8. Make sure the balloon is still the same size. 9. Release your grip on the balloon. Pass the hovercraft over the table. 10. Use pipe cleaners to help secure the balloon, if needed. 11. Your hovercraft is floating!	

Closing
Review First we stuck a pencil through the middle of the paper plate. Then we pushed the balloon through the hole. After that, we blew up the balloon. Finally, we released our grip on the hole of the balloon and pushed the hovercraft gently on the table. It didn't work the first time, so we kept trying. At the end, it worked!
Debrief **WHI?** Ask the following three questions: 1. What were some of the questions that came up in your group? 2. How did you go about including everyone? 3. If you were to try this again, what might you do differently?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "This activity taught me that it is important to keep trying until the hovercraft worked."

Your Reflection:

Modification of lesson:

You may extend the lesson by taping pennies to the plate to give balance, folding back the sides of the plate to give stability and direction, adding batteries with a fan to give lift, or making the hovercraft large enough to float a person (high school or young adult).

Consult 4 Kids Lesson Plans

Component	Science
Grade Level:	K-5
Lesson Title:	Red Cabbage Juice
Focus:	The American Story

Materials: Head of red cabbage, medium-sized bowl, grater, cold water, strainer, plastic container, clear plastic cups, plastic stirring spoons, baking soda, various liquids to test (lemon juice, vinegar, cola, milk, baking soda saturated solution, aspirin in distilled water, shampoo, other common liquids). Option: eyedroppers, waxed paper.

Opening

State the Objective

The purpose of this activity is to use red cabbage juice to find out if a liquid is an acid or a base.

Gain prior knowledge by asking students, "What do you know about _____?"

Most substances have what we call a pH. A pH meter measures whether the substance is an acid or a base. It is sensitive to the hydrogen ions which are present in the solution being tested. The pH scale has a range from 0 to 14. 7 is neutral. Pure water has a pH of 7. Water is neither an acid nor base. An acid is a substance that commonly tastes sour, such as vinegar. Acids can be corrosive. Strong acids are dangerous and will burn your skin. A base in a substance that commonly tastes bitter. It feels slippery. Ammonia is a base. Strong bases are dangerous and can burn your skin.

Acids and bases have the property of modifying color of certain substances. The juice or liquid of red cabbage is a blue-violet color, but when it comes in contact with acidic substances, it becomes red. When in contact with a base, it becomes green and even yellow.

This activity is an example of the American Story. American educators have developed such activities to promote awareness of acids and bases in a safe environment.

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")	***Activity → Teachable Moment(s) *throughout***
1. Ahead of time, prepare the cabbage juice. 2. Grate some red cabbage into a medium-sized bowl. 3. Cover the cabbage with cold water and let sit for 45 minutes. 4. Strain the juice into a plastic container. 5. Introduce students to the two terms – acid and base. Ask if they have ever heard of either word. 6. Discuss that red cabbage juice will change color when it comes into contact with an acid (red) and a base (green or yellow). 7. Pour an equal amount of cabbage juice into each plastic cup (one cup for each partner-pair. 8. Add 1 teaspoon of baking soda to all but one of your cups. The baking soda (which is a base) will turn your cabbage juice blue. The cup without the baking soda is a	Tip: Teachers, listen for questions that begin with "what" or "how." • Student: "How do you know that cola is an acid?" • Teacher: "What happened when you added cola to the cabbage juice with

control cup. This is the color that you want to get all of your mixtures to match. 9. If it is too confusing by adding too many liquids to the cabbage juice and baking soda solution, use eye droppers and waxed paper to see the dramatic color change. See Modification of Lesson.	baking soda?"
Students Practice ("You Do") 1. Give each partner-pair a plastic cup of cabbage juice with 1 teaspoon of baking soda added. 2. The challenge is to add various liquids, one teaspoon at a time, to see if they can turn the blue juice back to its original color. It will take different amounts of different acids to turn the juice back to its original color. If the juice stays blue, the liquid is probably not an acid.	

Closing
Review First we mixed baking soda in cabbage juice. Then we watch the solution turn blue. Next we added other liquids to try to find acids to turn the solution back to blue-violet. It took a long time, but we kept adding a lot of cola and it turned back to violet. Finally we learned about acids and bases.
Debrief **Three Whats** Ask the following three "what" questions: 1. What did you enjoy most about this activity? 2. What was the biggest challenge with this activity? 3. What did you learn from the group?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "It is important to try this activity ahead of time. I realize now that first graders needed the eye droppers and waxed paper so they could see the color change better."
Your Reflection:

Modification of lesson:
For younger students, provide students with an eye-dropper and a square of waxed paper. Squeeze three drops of pure cabbage juice on the paper, a good distance from each other. To the first drop, add a baking soda liquid. The drop should change to a blue color. To the second drop, add a drop of lemon juice. The drop of substance should turn reddish. Ask students what they have seen. Tell them that they have seen a chemical change when we added baking soda or lemon juice.

Consult 4 Kids Lesson Plans

Component	Science
Grade Level:	K-5
Lesson Title:	Thumbs Up!
Focus:	The American Story

Materials: Students' hands, duct tape or masking tape, small objects to pick up, pencils and paper

Opening

State the Objective

The purpose of this lesson is to model how primates (humans, apes, and Old World Monkeys) use an opposable thumb for grasping objects.

Gain prior knowledge by asking students, "What do you know about _____?"

What exactly is an opposable thumb? If thumbs can touch all of the other fingers on the same hand, fingerprint to fingerprint, they are opposable. It is believed that the thumb evolved because it allowed humans to flourish in our environment. The human thumb gave humans the ability to use tools. Writing is another trait that would be nearly impossible without the thumb. Human thumbs are very important for gripping or grasping objects.

The American Story Theme prevails as creative surgeons work to replace a missing thumb so the patient will be able to grip. Replacement parts for a thumb can be another digit on the hand, silicone or plastic joints, or the Big Toe.

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Talk about thumbs. Find out students' prior knowledge about thumbs.
2. Name animals that do not have an opposable thumb: mammals like cats, dogs, otters, and seals. How do they grip objects?
3. Ask students to observe their hands while moving their thumbs in a number of directions. Do the other fingers move?
4. Ask students to pick up a coin, turn a doorknob, lift a book, turn the pages, and write their name while paying attention to the involvement of their thumbs.
5. Record each task's level of difficulty: 1=very difficult, 2=difficult, 3=easy, 4=very easy.
6. Talk about the level of involvement of their thumbs: 1=thumb not needed, 2=thumb slightly used, 3=thumb used throughout the task, 4=extensive thumb usage.
7. Record this data on the classroom white board.

Activity → Teachable Moment(s) *throughout

Tip: Teachers, listen for questions that begin with "what" or "how."

- Student: "What if you just had one thumb and no fingers?"
- Teacher: "How would you grip something?"

Students Practice ("You Do")

1. Provide students with masking or duct tape.
2. Work in partner-pairs.

3. Tape the thumb of your writing hand to your palm so that you cannot use it. The tape should allow your other fingers to move freely. 4. Repeat the tasks: pick up a coin, turn a doorknob, lift a book, turn the pages, and write their name. 5. Use the same rating scales as above for difficulty of the task and the level of involvement of the thumb. 6. Talk about the results. Were the tasks more difficult with or without an opposable thumb? (They were more difficult without an opposable thumb.)	

Closing
Review First we observed our thumbs and how they move. Then we did a few tasks using our thumbs. We rated ourselves on a scale for difficulty of the task. Next we taped our thumbs to our palms so they wouldn't move. We performed the same tasks again and rated ourselves. Finally, we talked about the importance of opposable thumbs.
Debrief **Three Whats** Ask the following three "what" questions: 1. What did you enjoy most about this activity? 2. What was the biggest challenge with this activity? 3. What did you learn from the group?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "The kids went wild with the masking tape. Next time, I will tear off a piece of tape for each student."

Your Reflection:

Modification of lesson: For younger students, do all of these activities as a group. Students may need help taping their thumbs.

Consult 4 Kids Lesson Plans

Component	Science
Grade Level:	K-5
Lesson Title:	Zapped by Static Electricity!
Focus:	The American Story

Materials: Several inflated balloons with strings attached, aluminum cans, your hair, Styrofoam packing pellets, puffed rice cereal, salt and pepper restaurant packets

Opening

State the Objective

The purpose of this activity is to find out about positively and negatively charged particles using a few basic items. Students will determine if they can control when objects are attracted or repelled from each other.

Gain prior knowledge by asking students, "What do you know about _____?"

Rubbing a balloon against your hair creates static electricity. This means that negatively charged particles (electrons) jump to positively charged objects. When you rub the balloon against your hair, the balloon becomes negatively charged. The balloon has taken some of the electrons from the hair leaving it with a positive charge. It is said that opposites attract. Your positively charged hair rises up to meet the negatively charged balloon. The same principle works with the aluminum can, packing pellets, puffed rice and salt and pepper.

American kids are always experimenting with things around the house. This activity is a safe way to see static electricity at its best!

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Talk about static electricity. What is the difference between static and current electricity? (Current electricity flows through wires and is controlled. Static electricity is not as controlled.)
2. Ask students to make predictions about what will happen when they bring various objects in contact with the negatively charged balloon.

Students Practice ("You Do")

1. Give each student a balloon.
2. Rub the balloon against their hair. With a partner, hold the balloons near each other to see if they move closer or repel. (They will repel since both are charged with negative electrons.
3. Rub one balloon back and forth on your hair then slowly pull it away. Ask your partner what is happening to your hair. Try this in front of a mirror.
4. Put the aluminum can on the side of a table.
5. After rubbing the balloon on your hair again, hold the balloon close to the can and

Activity → Teachable Moment(s) *throughout

Tip: Teachers, listen for questions that begin with "what" or "how."

- Student: "How can I get the Styrofoam pellets to fall off the balloon?"
- Teacher: "What needs to happen before they can fall off?" (Some of the electrons may drain off the balloon, and the particles will fall."

watch as the can rolls toward it. Slowly move the balloon away from the can. The can will follow. 6. Do other experiments with puffed cereal, salt and pepper in a plate, and Styrofoam packing pellets. 7. Ask students to try other common objects that can be easily charged.	

Closing

Review

First we each got a balloon. Then we rubbed the balloon against our hair. We did experiments to make our balloons go away from each other and made our hair stand out. We watched how a balloon with static electricity can make an aluminum can move. The best activity was to watch puffed cereal jump to the balloon. Finally we talked about static electricity.

Debrief

DIGA – Four Step Debrief

Step 1: Describe: Students describe what they did during the activity.
Step 2: Interpret: Students answer one or some of the following questions:
What were your key learnings when you participated in this activity?
What skills did you need to utilize to participate in this activity?
How did you feel when participating in this activity
Step 3: Generalize: How can you use the skills or your key learnings in your life?
Step 4: Apply: How can you use the skills or your key learnings in your work?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "My Aha moment was when I saw puffed cereal jump to the balloon. I didn't know static electricity had that much power!"

Your Reflection: