Science Project Ideas 4th Grade

Why 4th Grade Science Projects Matter

Science projects give 4th graders a chance to turn textbook concepts into hands-on experiments. By designing a simple experiment, students practice critical thinking, problem solving, and data collection—skills that are essential for future success in any STEM field. A well-chosen project can spark curiosity, reinforce classroom lessons, and make learning unforgettable.

Top Science Project Ideas for 4th Grade

Below are a selection of engaging, age-appropriate science projects that combine creativity with solid scientific principles. Each idea includes a brief overview, required materials, step-by-step instructions, and a list of learning outcomes.

1. Homemade Volcano: Erupting

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Chemical Reactions

Goal: Demonstrate an acid-base reaction by creating a volcanic eruption.

- **Materials:** Baking soda, vinegar, red food coloring, dish soap, a small bottle, play dough or clay, a tray.
- **Steps:**
  1. Build a volcano shape around the bottle using play dough.
  2. Place the volcano on the tray to catch overflow.
  3. Fill the bottle with 2–3 tablespoons of baking soda.
  4. Add a squirt of dish soap and a few drops of red food coloring.
  5. Pour vinegar slowly into the bottle and observe the eruption.
- **Learning Outcomes:** Understand chemical reactions, observe gas production, and discuss the role of acids and bases.

2. Plant Growth in Different Light Conditions

Goal: Explore how light intensity and color affect plant growth.

- **Materials:** Three identical plants (e.g., beans), clear plastic bottles, tape, a sunny window, a dark closet, a red LED light.

- **Steps:**
  1. Label each bottle as “Sunlight,” “Shade,” and “Red Light.”
  2. Place one plant in each bottle, ensuring equal soil and water.
  3. Position the bottles in their respective lighting conditions.
  4. Record daily measurements of height and leaf color for two weeks.
  5. Compare the growth data at the end of the experiment.
- **Learning Outcomes:** Understand photosynthesis, analyze data, and learn about controlled experiments.

3. Water Filtration System: Clean Water Challenge

Goal: Build a simple filter to demonstrate water purification.

- **Materials:** A plastic bottle cut in half, sand, gravel, activated charcoal, cotton balls, a coffee filter, dirty water.
- **Steps:**
  1. Place the coffee filter at the bottom of the bottle’s opening.
  2. Layer cotton, charcoal, sand, and gravel in that order.
  3. Pour dirty water slowly

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through the filter and collect the output.
4. Compare the clarity of the filtered water to the original.

- **Learning Outcomes:** Learn about filtration, water quality, and environmental science.

4. Balloon Rocket: Newton's Third Law

Goal: Illustrate action-reaction forces using a balloon rocket.

- **Materials:** A long piece of string, a drinking straw, a balloon, tape, a ruler.
- **Steps:**
  1. Thread the string through the straw and secure both ends across a room.
  2. Inflate the balloon but do not tie it; tape it to the straw.
  3. Release the balloon and observe the motion along the string.
  4. Measure the distance traveled and discuss the forces involved.
- **Learning Outcomes:** Understand Newton's Third Law, explore propulsion, and develop measurement skills.

5. Simple Electric Circuit: Building a

Lightbulb

Goal: Construct a basic circuit to power a lightbulb.

- **Materials:** A small LED, a 1.5V battery, two alligator clips, a battery holder, and insulating tape.
- **Steps:**
  1. Attach one alligator clip to the LED's positive leg.
  2. Connect the other clip to the battery's positive terminal.
  3. Repeat for the negative side.
  4. Observe the LED lighting up and discuss the flow of electrons.
- **Learning Outcomes:** Learn about circuits, conductors, and the basics of electricity.

Tips for Successful Science Projects

1. **Start with a Question:** Encourage students to ask a clear, testable question that guides the experiment.
2. **Keep It Simple:** Use readily available materials to avoid confusion and keep focus on the scientific concept.
3. **Document Everything:** Have students record observations, measurements, and conclusions in a lab notebook

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