

Lesson 5: Exploring Reactions with the National Geographic Stunning Chemistry Set

Subject: Chemistry & Reactions

Introduce learners to the amazing world of chemical change through safe, guided experiments that fizz, color, and bubble — igniting curiosity in every young scientist!

Learning Objectives

- 1 Understand the difference between physical and chemical changes.
- 2 Observe and describe visible evidence of reactions (bubbles, color change, temperature, gas formation).
- 3 Practice safe lab habits and data recording.
- 4 Develop critical thinking through predicting and observing outcomes.

Materials Needed

- 1 National Geographic Stunning Chemistry Set
- 2 Protective eyewear and gloves
- 3 Notebook or lab sheet for data recording
- 4 Optional: Thermometer, magnifier, or digital scale

Lesson Procedure

- 1 Warm-Up: Discuss how scientists know a reaction has occurred. Show photos of rust, baking, or fireworks.
- 2 Safety Setup: Review goggles, cleanup materials, and lab zone rules.
- 3 Reaction Time: Choose 2–3 experiments (bubbling volcano, rocket launch, color change). Predict and record results.
- 4 Observation: Encourage descriptive language — 'produced gas,' 'temperature increased,' 'solution turned pink.'
- 5 Compare & Contrast: Identify which reactions produced heat or color changes.
- 6 Cleanup: Safely dispose of materials and clean the workspace.

Discussion & Reflection

- 1 What clues helped you identify a chemical reaction?
- 2 Which experiment was endothermic or exothermic?
- 3 How do reactions connect to everyday life (cooking, photosynthesis, rust)?

Extensions

- 1 Data Tracking: Graph reaction time or visible gas production.
- 2 STEM Writing: Write a 'reaction recipe' using ingredients and results.

- 3 Cross-Curricular: Connect to earth science (acid rain), biology (enzymes), or kitchen science (baking soda & vinegar).

Parent & Teacher Tips

- 1 Encourage note-taking before and after experiments.
- 2 Focus on curiosity, not perfection — 'Why did this happen?' is the goal.
- 3 Repeat experiments with variations (temperature, ratio, surface area).
- 4 Always supervise and emphasize proper cleanup and safety.

Wrap-Up

Hands-on chemistry transforms abstract science into real, exciting learning. These activities teach observation, patience, and the joy of discovery — laying the foundation for lifelong STEM curiosity.