

Lesson 7: Mega STEM Adventures with the National Geographic Mega Science Lab

Subject: Multi-Discipline STEM (Chemistry, Earth Science, Physics)

This lesson introduces learners to hands-on STEM exploration across multiple science fields. Students rotate between chemistry and earth science experiments, practicing observation, prediction, and analysis in a structured lab format.

Learning Objectives

- 1 Build consistent weekly lab routines across multiple science strands.
- 2 Develop accurate observational and data-collection habits.
- 3 Differentiate between chemical and physical changes through hands-on activities.
- 4 Strengthen scientific vocabulary and curiosity.

Materials Needed

- 1 National Geographic Mega Science Lab Kit (130+ Experiments)
- 2 Safety goggles, gloves, and table cover
- 3 Notebook or printed lab log sheets
- 4 Optional: thermometer, digital scale, or magnifying glass

Preparation & Setup

- 1 Choose 3–4 experiments suitable for your child's age and time limit.
- 2 Set up two workstations: one for chemistry reactions and one for earth science activities.
- 3 Print lab logs or create a science journal for data tracking.
- 4 Review safety guidelines and model proper use of equipment.

Lesson Steps

- 1 Warm-Up (5 min): Discuss what makes an experiment scientific. Ask: 'How do scientists know if something has changed chemically?'
- 2 Station A – Chemistry (15–20 min): Perform a safe chemical reaction. Record changes in temperature, color, or gas formation.
- 3 Station B – Earth Science (15–20 min): Identify and compare mineral samples or start a crystal growth project.
- 4 Observation (10 min): Students record and sketch what they notice at each station.
- 5 Reflection (10 min): Discuss differences between the types of experiments and which tools improved accuracy.

Discussion & Reflection

- 1 What are signs that a chemical reaction has occurred?

- 2 How are earth science observations different from chemistry reactions?
- 3 Which experiment surprised you most and why?
- 4 What could we change next time to test a new variable?

Assessment Ideas

- 1 Complete a 'Claim-Evidence-Reasoning' chart for one experiment.
- 2 Use lab logs to check for full data entries (predictions, observations, and conclusions).
- 3 Quick oral quiz: define 'variable,' 'reaction,' and 'observation.'

Extensions

- 1 Graph the reaction time of various experiments and compare results.
- 2 Write a one-page science summary describing what was learned this week.
- 3 Use the same stations to explore density or magnetism in future lessons.

Parent & Teacher Tips

- 1 Store all reusable supplies in bins labeled 'Chemistry' and 'Earth Science.'
- 2 Model how to read directions before beginning each experiment.
- 3 Praise effort, curiosity, and careful recording—not just results.
- 4 Use a shared digital photo log or binder for ongoing lab tracking.

Wrap-Up

The National Geographic Mega Science Lab allows young scientists to explore a variety of scientific fields through practical, engaging experiments. By maintaining consistent routines, children develop the mindset of real scientists—curious, patient, and observant.