



Science Curriculum Overview

(Foundations of Scientific Inquiry – Broad Overview & Methodology)



Core Focus

Welcome to your personalized science learning journey!

This module introduces students to the core of scientific thinking, emphasizing systematic inquiry, ethical responsibility, and foundational knowledge that supports all STEAM fields.

Key Concepts & Learning Goals

Theme	Topics
1. What is Science?	Science is the systematic study of the natural world through observation and experimentation. It is empirical, testable, and falsifiable. Scientific thinking values curiosity, skepticism, and critical reasoning.
2. Scientific Method	The scientific method is a structured approach to inquiry involving Observation, Question, Hypothesis, Experiment, Analysis, Conclusion, and Communication. It is iterative and builds knowledge through repeatable, transparent steps.
3. Branches of Science	An introduction to the major scientific disciplines: Physical Sciences (Physics, Chemistry), Life Sciences (Biology, Health, Environment), Earth & Space Sciences (Geology, Astronomy), and a brief mention of Social Sciences.
4. Lab Safety	Lab safety includes protocols and practices that help prevent accidents and ensure a safe working environment, such as wearing goggles, using tools correctly, and following clean-up procedures.
5. Research Methods	Covers observation, measurement, documentation, and variable control. Teaches students how to design and conduct controlled experiments and record findings accurately.
6. Data Analysis	Data analysis involves interpreting results using charts, graphs, and statistical reasoning to draw evidence-based conclusions. This supports the development of math skills in a science context.
7. Scientific Communication	Scientific ideas must be shared clearly and honestly. Students learn how to present their findings using visual tools, reports, and presentations, and explore how peer review ensures accuracy and credibility.
8. Ethics in Science	Responsible research includes honesty, transparency, and avoiding bias. Introduces famous case studies of ethical breaches and discusses the importance of reproducibility and peer review.



Hands-On Activities

- **Mystery Tube** (inferring unseen mechanisms)
 - **Paper Towel Absorbency Lab** (controlled experiment design)
 - **"Design a Plant" Exercise** (evidence-based hypothesis creation)
 - **Build a Science Journal** (ongoing observational records)
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STEAM Integration

- **Science:** Core foundation of systematic inquiry
 - **Technology:** Using digital tools for measurement and documentation
 - **Engineering:** Framing problems and testing design solutions
 - **Arts:** Science posters, diagramming experiments
 - **Math:** Measuring, charting, and analyzing results
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21st Century Skills Emphasized

- Critical Thinking
- Evidence-Based Reasoning
- Ethical Responsibility
- Communication & Collaboration