Alabama Science

Grades 3-5: Overview

Science and Engineering Practices (SEPs)

1. **Asking Questions and Defining Problems: Specifying qualitative relationships.** 3-5.SEP.1
2. **Developing and Using Models: Building and revising simple models; using models to represent events and design solutions** 3-5.SEP.2
3. **Planning and Carrying Out Investigations: Designing and conducting investigations with controlled variables; providing evidence to support explanations or design solutions** 3-5.SEP.3
4. **Analyzing and Interpreting Data: Introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations, using digital tools whenever possible.** 3-5.SEP.4
5. **Using Mathematics and Computational Thinking: Extending quantitative measurements to a variety of physical properties; using computation and mathematics to analyze data and compare alternative design solutions.** 3-5.SEP.5
6. **Constructing Explanations and Designing Solutions: Using evidence in constructing explanations that specify variables, describing and predicting phenomena, and designing multiple solutions to design problems.** 3-5.SEP.6
7. **Engaging in Argument from Evidence: Critiquing the scientific explanations or solutions proposed by peers, citing relevant evidence about the natural and designed world(s).** 3-5.SEP.7
8. **Obtaining, Evaluating, and Communicating Information: Evaluating the merit and accuracy of ideas and methods.** 3-5.SEP.8

Crosscutting Concepts (CCCs)

1. **Patterns: Similarities and differences in patterns can be used to sort, classify, communicate, and analyze simple rates of change for natural phenomena and designed products. Patterns of change can be used to make predictions. Patterns can be used as evidence to support an explanation** 3-5.CCC.1
2. **Cause and Effect: Mechanism and Prediction: Cause and effect relationships are routinely identified, tested, and used to explain change. Events that occur together with regularity might or might not be a cause and effect relationship.** 3-5.CCC.2

3 **Scale, Proportion, and Quantity: Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long time periods. Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.** 3-5.CCC.3

4 **Systems and System Models: A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. A system can be described in terms of its components and their interactions.** 3-5.CCC.4

5 **Energy and Matter: Flows, Cycles, and Conservation: Matter is made of particles. Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. Energy can be transferred in various ways; energy can be transferred between objects.** 3-5.CCC.5

6 **Structure and Function: Different materials have different substructures, which can sometimes be observed. Substructures have shapes and parts that serve functions.** 3-5.CCC.6

7 **Stability and Change: Change is measured in terms of differences over time and may occur at different rates. Some systems appear stable, but over long periods of time will eventually change.** 3-5.CCC.7