3rd Grade Science

Instructional Focus:

- Apply scientific process skills by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring and communicating findings.
- Observe and describe the student's world to answer simple questions. (e.g., participating in different types of guided scientific investigations, such as observing objects and events and collecting specimens for analysis)
- Work collaboratively to carry out experiments and investigations.
- Practice checking and verifying results (accurate measurements, repeated observations, etc.)
- Use scientific tools (i.e. measuring tape, meter stick, thermometer, hand lens, balance)
- Record data to communicate results scientific experiments and investigations through charts, graphs, writing and speaking.
- Differentiate evidence from opinion, understanding that scientists do not rely on claims or conclusions unless they are backed by confirmed observations.

Physical Science: Motion and Stability

Cross Cutting:

- Cause and effect relationships are routinely identified.
- Patterns of change can be used to make predictions.

Standard	Objective	Examples
3-PS2-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	***Forces and Motions*** Students will: • Understand that force has both strength and direction. • Understand that an object at rest typically has multiple forces acting on it. • Observe how force acts on one particular object. ***Types of Interactions*** • Describe how objects in contact exert forces on each other. • Demonstrate their understanding of Gravitational Force by observing and describing that different objects fall to the earth unless something is holding them up.	Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all. A force is a push of a pull. Force can change the motion of an object. Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.
3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	***Forces and Motion*** Students will: • Observe and measure the patterns of an object's motion in various situations. • Recognize that when past motion exhibits a regular pattern, future motion can be predicted from it. • Investigate and describe how different amounts of force can change the direction and speed of an object in motion.	Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw.

3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	***Types of Interactions*** Students will: • Understand that electric forces between a pair of objects do not require the objects to be in contact. • Understand that magnetic forces between a pair of objects do not require the objects to be in contact. • Investigate and describe their understanding that the sizes of the forces in each situation depend on: ~ The properties of the objects ~ The distances between the objects • Distinguish that the type of force between two magnets is dependent on their orientation relative to each other.	Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.
3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.	***Types of Interactions*** Students will: • Create a simple design that demonstrates magnetic interaction between a pair of objects.	Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.

Life Science

Cross Cutting:

- Plant and animal adaptations, inherited traits and habitats
- Geography of Mat-Su (Social Studies)
- Patterns of change can be used to make predictions.
- Compare and Contrast
- Cause and Effect Relationships

Standard	Objective	Examples
3-LS2-1. Construct an argument that some animals form groups that help members survive.	Students will: • Be able to explain being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size.	
3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	Students will: • Analyze and find patterns to show understanding that many characteristics of organisms are inherited from their parents. • Understand that different organisms vary in how they look and function because they have different inherited traits.	Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.
3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.	Students will: • Understand and provide evidence that an organism's traits can be influenced by the environment.	Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.
3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	Students will: • Collect data from information provided by fossils that explain the environment in which the organism lived.	Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.

3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	Students will: • Explain how the traits of an organism allow the organism to live successfully in its environment.	Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.
3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	Students will: • Be able to explain for any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.	Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.
3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	Students will: • Understand when the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. • Understand that populations live in a variety of habitats, and change in those habitats affects the organisms living there.	Resilience and biodiversity examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.

Earth Systems

Cross Cutting:

- Weather patterns and climates
- Geography of Mat-Su (Social Studies)
- Make predictions
- Cause and Effect Relationships

Standard	Objective	Examples
3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	***Weather and Climate*** Students will: • Understand that scientists record patterns of the weather across different season and areas. • Record data patterns using tables or graphical displays of the weather across different times and areas • Make predictions about weather conditions based upon their recorded data and patterns.	Examples of data could include average temperature, precipitation, and wind direction.
3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.	***Weather and Climate*** Students will: • Understand that climate describes a range of an area's typical weather conditions. • Understand the extent to which typical weather conditions vary over years. • Apply knowledge about climates to various regions of the world.	

3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.	Students will: • Understand a variety of natural hazards result from natural processes. • Understand humans cannot eliminate natural hazards but can take steps to reduce their impacts. • Decide if a design solution is an efficient solution to a natural, weather-related hazard.	Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lighting rods.
Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.		
Engineering and Technology: Engineering Design		
Standard	**Objective**	**Examples**
3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. **ETS1.A.**	Students will: • Recognize possible solutions to a problem are limited by available resources, materials, time, and cost. (Constraints). • Explain that a successful solution is determined by the desired criteria. • Compare proposals for solutions on the basis of how well each one meets the specified criteria for success and how well each takes the constraints into account.	People's needs and wants change over time, as do their demands for new and improved technologies.
3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. **ETS1.B**	Students will: • Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions • At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.	Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.
3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. **ETS1.B, ETS1.C**	Students will: • Plan and carry out designed tests using controlled variables to identify failure points or difficulties. • Suggest which elements of the design need to be improved based upon failure points or difficulties.	An example could be growing 3 identical plants with the variable being soil, gravel and water as the growing medium.