

Instructional Support for the Idaho State Science Content and Performance Standards: Third Grade

<u>Content Domain</u>	<u>Performance Standard</u>	<u>Supporting Content</u>	<u>Science and Engineering Practice</u>	<u>Cross Cutting Concept</u>
Physical Sciences: Motion and Stability: Forces and Interactions	PS1-3-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	<p>Balanced & Unbalanced Forces Effect Motion Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. Objects in contact exert forces on each other.</p> <ul style="list-style-type: none"> 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. <p>Limit: 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.</p>	<p>Planning and Carrying Out Investigations</p> <ul style="list-style-type: none"> Identify and describe the effects of different forces on an object's motion and how evidence of balanced and unbalanced forces could be collected. Collaboratively develop an investigation plan to collect data about the change in motion when different forces act on an object. 	<p>Cause and Effect</p> <ul style="list-style-type: none"> Cause and effect relationships are routinely identified, tested, and used to explain change.
	PS1-3-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	<p>Patterns of Motion Force applied to an object can alter the position and motion of that object causing it to revolve, rotate, float, sink, fall, or rest. The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it.</p> <ul style="list-style-type: none"> Example 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. <p>Limit: Assessment does not include technical terms such as momentum, vector, period and frequency.</p>	<p>Planning and Carrying Out Investigations</p> <ul style="list-style-type: none"> From a given investigation plan, describe the purpose of the investigation, and the data to be collected as well as how that data will serve as evidence. Collect data on the motion of an object to identify a pattern to predict future motion. 	<p>Patterns</p> <ul style="list-style-type: none"> Patterns of change can be used to make predictions.
	PS1-3-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	<p>Electric/Magnetic Interactions Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.</p> <ul style="list-style-type: none"> Examples of 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; 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. <p>Limit: Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.</p>	<p>Asking Questions and Defining Problems</p> <ul style="list-style-type: none"> Formulate questions from observations of objects interacting with each other through electric or magnetic forces. Questions should clarify the cause and effect relationship between sizes of forces, distances between objects, relative orientation of magnets, presence of magnetic or electric forces, and electrically charged objects. 	<p>Cause and Effect</p> <ul style="list-style-type: none"> Cause and effect relationships are routinely identified, tested, and used to explain change.
	PS1-3-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.	<p>Electric/Magnetic Interactions Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.</p> <ul style="list-style-type: none"> 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. 	<p>Asking Questions and Defining Problems</p> <ul style="list-style-type: none"> Identify and describe a simple design problem, ideas required to solve the problem, criteria for success, and possible constraints. Design solutions to a problem involving interacting magnets. 	

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Life Sciences: Ecosystems: Interactions, Energy, and Dynamics	LS1-3-1. Construct an argument that some animals form groups that help members survive.	Some Animals Form Groups to Help Members Survive 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.	Engaging in Argument from Evidence <ul style="list-style-type: none"> Identify a claim about the idea that some animals form groups and being a member of a group helps members survive. Describe given evidence, data, or models identifying types of animals that live in groups and why they do so. Use reasoning to describe, identify, evaluate, critique and connect relevant evidence to construct an argument that supports the claim. 	Cause and Effect <ul style="list-style-type: none"> Cause and effect relationships are routinely identified and used to explain change.
Life Sciences: Heredity: Inheritance and Variation of Traits	LS2-3-1. 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.	Plants and Animals Inherit Traits/Variations Exist In Similar Organisms Many characteristics of organisms are inherited from their parents. Different organisms vary in how they look and function because they have different inherited information. <ul style="list-style-type: none"> Examples of patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans. Limit: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.	Analyzing and Interpreting Data <ul style="list-style-type: none"> Use graphical displays to organize data including traits of plant and animal offspring/parents and variations of similar traits in groups of similar organisms. Identify and describe patterns within the data. Describe patterns that serve as evidence of inherited traits, variance in traits, and variation of traits in groups of organisms of the same type. 	Patterns <ul style="list-style-type: none"> Similarities and differences in patterns can be used to sort and classify natural phenomena.
	LS2-3-2. Use evidence to support the explanation that traits can be influenced by the environment.	Traits Can Be Influenced By Environment Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. The environment also affects the traits that an organism develops. <ul style="list-style-type: none"> 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. 	Constructing explanations and Designing Solutions <ul style="list-style-type: none"> Identify a given explanation to be supported including that inherited traits can be influenced by the environment. Identify, describe, and use evidence to construct or support the explanation. Use reasoning to connect the evidence and support the explanation to describe specific cause and effect relationships between environmental factors and traits. 	Cause and Effect <ul style="list-style-type: none"> Cause and effect relationships are routinely identified and used to explain change.

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Earth and Space Sciences: Earth's Systems	ESS1-3-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Typical weather conditions expected in a season Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. <ul style="list-style-type: none"> Examples of data could include average temperature, precipitation, and wind direction. Limit: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.	Analyzing and Interpreting Data <ul style="list-style-type: none"> Use graphical displays to organize data by season including weather conditions across multiple seasons and different areas. Identify and describe patterns of weather conditions across different seasons and areas. Interpret data to predict typical weather conditions expected during a particular season in different areas. 	Patterns <ul style="list-style-type: none"> Patterns of change can be used to make predictions.
	ESS1-3-2. Obtain and combine information to describe climates in different regions of the world.	Different Climates Throughout the World <ul style="list-style-type: none"> Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. 	Obtaining, Evaluating, and Communicating Information <ul style="list-style-type: none"> Obtain information from reliable media about climate and variations of climate in different regions of the world. Combine information to provide evidence about the climate pattern in a region for use in making predictions about weather patterns in that region. Use information to describe climates in different regions of the world, use of patterns to predict weather, and that climate can vary over time. 	Patterns <ul style="list-style-type: none"> Patterns of change can be used to make predictions.
Earth and Space Sciences: Human Activity	ESS2-3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	Weather Related Hazards/Solutions A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. <ul style="list-style-type: none"> Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods. 	Engaging in Argument from Evidence <ul style="list-style-type: none"> Make a claim that a given design solution reduces the impact of a weather related hazard. Describe relevant evidence of weather-related hazards, problems caused by these hazards, and how a proposed solution addresses the problem. Evaluate the evidence using given criteria and constraints on how solutions address the problem including merits, benefits, and risks of a given solution. 	Cause and Effect <ul style="list-style-type: none"> Cause and effect relationships are routinely identified, tested, and used to explain change.