

PRESTON PUBLIC SCHOOLS
Science Curriculum Revision to Align with NGSS
Unit Plan Organizer
3rd Grade

Grade Level	Unit Name	Unit Theme/Description	NGS Standards Included
3	Animals Through Time <i>Habitats, Heredity, & Change Over Time</i>	In this unit students will develop an appreciation for how animals and the places they live (their habitats) are not constant—they have changed over time. Fossils give us a window to the animals and habitats of the past. Selective breeding shows us not only how some animals of the past became domesticated, but allows us to imagine how they might look in the future.	3-LS2-1 Construct an argument that some animals form groups that help members survive; 3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago; 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; 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; Science & Engineering Practices: --Students analyze and interpret data from fossil records to determine how the environment they were found in has changed over time. They use this evidence to engage in an argument for which environment an organism survived in based on its

			<p>characteristics; Students analyze and interpret data from fossil records to determine what type of food an organism ate/eats. They use the fossil evidence to engage in an argument for why they chose each food source; --Students carry out an investigation by comparing the stride length of student runners to the stride length of a comparable sized dinosaur, CeeLo. They use mathematics and computational thinking to record stride length, graph the value and determine the speed at which the student was running; --Students analyze the traits of parent dogs to determine which puppy they could have. They construct explanations about which traits the puppy gets from each parent; --Students carry out an investigation by using a model to simulate the introduction of a predator species on Lizard Island. Students simulate multiple generations of lizards, analyzing and interpreting the data after each one. They use this data to engage in argument from evidence to support their claim about how the offspring change from the original lizards; --Students carefully observe animals that live in groups in order to obtain, evaluate, and communicate information about animal social behavior. Using the evidence from their observations, students engage in an argument to support their claim that animals form groups to help them survive; --Students obtain and evaluate information from different people who live in Pondville, a town with a severe mosquito problem. Then, using this information, students design solutions that will reduce the number of mosquitoes that live in Pondville; --Students measure their own physical traits (arm strength, balance, and height) and then</p>
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			<p>make predictions about how these traits would change after living in outer space for a year. Students use this information to construct an explanation for how the environment can influence and change physical traits;</p> <p>Cross-Cutting Concepts:</p> <ul style="list-style-type: none"> --Students reason about the cause and effect relationship between environment and the type of organism that can survive there. They observe that organisms have body parts (structure) that helps them survive in their habitat (function). Students also consider the rate of stability and change of an environment; --Students consider that fossilized evidence of organism's teeth (structure) can determine which type of food they ate (function) and the type of environment they inhabited; --Students explore quantity by measuring stride length. They observe the relationship between stride length and speed; --Students recognize patterns in traits between parents and offspring; --Students recognize the cause and effect relationship between a change in the environment and the survival of organisms that inhabit it. They recognize environments as a system, made up of interdependent parts that function as a whole. They can be stable and change over time at different rates of speed; --Students recognize the cause and effect relationship between animals living in a group and the members of that group surviving; --Students recognize the cause and effect relationship between a change in the environment and the survival of organisms that live there. They recognize environments as a system, made up of interdependent parts that function as a whole; --Students recognize the cause and effect
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			relationship between the environment and its influence on physical traits (physical characteristics).
3	<p>Power of Flowers <i>Life Cycle, Traits, & Heredity</i></p>	<p>This unit develops the idea that by studying how plants reproduce and pass on their traits, we human beings have figured out how to make food plants even more useful to us. Students first discover how plants reproduce by exploring the process of pollination and fruiting. Then students are introduced to the process of plant domestication (selection of traits based on inheritance and variation).</p>	<p>3-LS1-1 Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death; 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; 3-LS3-2 Use evidence to support the explanation that traits can be influenced by the environment; 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.</p> <p>Science & Engineering Practices: --Students develop a model of a flower and bee to simulate pollination. With a partner, they carry out an investigation to determine how bees fly between flowers and cause pollination. Students analyze their data and construct an explanation for if their flower will produce seeds or not; --Students carry out an investigation to determine if a food is a science fruit or vegetable. They cut open each food to determine if there are seeds. Students analyze this data to determine if the food is a fruit or vegetable;</p>

			<p>--Students carry out an investigation to determine the sweetness of different apple varieties;</p> <p>--Students engage in argument from evidence about which plants and fruits are related to one another. Students obtain, evaluate, and communicate information by sorting plant cards into groups based on similar traits. They determine which plants share wild parents and are varieties of each other.</p> <p>Cross-Cutting Concepts:</p> <p>--Students explore the pattern of similarities in life cycles among organisms. Students observe that a plant's stigma (structure) is sticky to 'catch' pollen (function);</p> <p>--Students use patterns to sort food as a science fruit or a science vegetable. Students learn that fruit (structure) contains seeds and helps them spread (function);</p> <p>--Students identify the similarities and differences shared between offspring and their parents, or among siblings as a pattern;</p> <p>--Students recognize similarities and differences among the traits of different plants as a pattern.</p>
3	<p>Stormy Skies <i>Weather, Climate, & Water Cycle</i></p>	<p>This unit develops the idea that by paying careful attention to clouds, wind, and other weather clues around us, we can predict the daily weather and make sense of why places on earth look and feel the way they do.</p>	<p>3-ESS2-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season;</p> <p>3-ESS2-2 Obtain and combine information to describe climates in different regions of the world;</p> <p>3-ESS3-1 Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.</p> <p>Science & Engineering Practices:</p>

			<p>--Students carry out an investigation by using a model to observe evaporation. They engage in argument from evidence using observations from their investigation to explain what clouds are;</p> <p>--Students obtain and communicate information about different types of clouds by creating a Storm Spotter's Guide. They engage in argument from evidence by using this information to analyze multiple scenarios and determine if a storm will occur and why;</p> <p>--Students obtain and evaluate information about multiple locations' weather. They communicate the information by color coding a map based on climate. Students analyze and interpret the data to determine climate patterns across the world;</p> <p>--Students define problems that strong winds cause. They develop and use a model of a home in order to design a solution that keeps the roof attached to the home and stops the home from blowing away in the wind. They test and improve their prototype.</p> <p>Cross-Cutting Concepts:</p> <p>--Students consider the cause and effect relationship between heated liquid water and the evaporation of gas water that forms into clouds;</p> <p>--Students explore patterns of changing clouds as a way to predict weather;</p> <p>--Students recognize climate across the world as an observable pattern;</p> <p>--Students identify the cause and effect relationship between strong winds and the problems they cause.</p>
3	Invisible Forces <i>Forces & Motion, Magnetism</i>	This introductory forces unit will give students a new understanding of the invisible pushes and pulls that operate	3-PS2-1 Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced

		<p>in the world around them. They will realize that understanding forces will let them do surprising things — from building a sturdy bridge from paper to using the pull of a rubber band to send a cardboard “hopper” flying. What students learn in this unit will connect to the world around them, leading them to think about such things as the force of friction as they slide down a playground slide or the invisible force that makes magnets cling to the refrigerator. Hands-on activities focus on engineering, investigation, and discovery.</p>	<p>forces on the motion of an object; 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; 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; 3-PS2-4 Define a simple design problem that can be solved by applying scientific ideas about magnets.</p> <p>Science & Engineering Practices:</p> <ul style="list-style-type: none"> --Students build a Hopper Popper to carry out an investigation about force and motion. They construct an explanation for which direction the forces act on the object, causing it to hop; --Students define a problem - designing a bridge that will hold the most weight - and its constraints, it can only be made of paper. They collaborate with peers to design multiple solutions. They carry out investigations to test each of their prototypes, determine how to improve their design; --Students use a model of a slide to carry out an investigation. They ask questions about different materials and weights and test their ideas to explore which combinations move the fastest down the slide. Students then complete a fair test to determine which material has the least friction. They engage in argument from evidence to share their findings; --Students ask questions about magnets and develop and carry out investigations to observe the different properties of them; --Students design a solution for a magnetic lock
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			<p>by developing a model.</p> <p>Cross-Cutting Concepts:</p> <ul style="list-style-type: none"> --Students recognize the cause and effect relationship between the forces acting on an object and the direction of its motion; --Students explore the relationship between the structure and function of different bridge designs; --Students consider the cause and effect relationship between a material's surface and the amount of friction it has; --Students consider the cause and effect relationship between this distance of a magnet and the strength of the force. Students consider the cause and effect relationship between which direction two magnets are facing and if they will push or pull on one another; --Students consider the cause and effect relationship between two magnets as a way to so design solutions using the engineering process.
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