Pali Institute: Applicable Common Core/Next Generation Standards
Outdoor Education, Science, & Leadership Curriculum

Aerodynamics:

CCSS.ELA-Literacy.RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

NGSS-MS-PS2-2: Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.

NGSS-MS-PS2-4: Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.

NGSS-5-PS2-1: Support an argument that the gravitational force exerted by Earth on objects is directed down.

NGSS MS ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

NGSS 3-5ETS1-3: 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.

Animal Survivor:

NGSS-MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

NGSS-MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

NGSS-MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

NGSS-5-LS1-1: Support an argument that plants get the materials they need for growth chiefly from air and water.

NGSS-5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

NGSS MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

NGSS 5-PS3-1: Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

CSI:

NGSS-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.

NGSS-3-5ETS1-2: 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.

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Energy Dilemma:

NGSS-MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

NGSS-MS-ESS3- 4: Construct an argument supported by evidence for how increases in human population and per-capital consumption of natural resources impact Earth's systems.

NGSS-MS-ESS3-1: Construct a scientific explanation based on evidence for how the uneven distribution of Earth's mineral, energy, and groundwater resources are the results of past and current geoscience processes.

NGSS 4-ESS3-1: Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Forest Ecology:

NGSS 4-ESS2-1: Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

NGSS-MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

NGSS-MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

NGSS-5-LS1-1: Support an argument that plants get the materials they need for growth chiefly from air and water.

NGSS-5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Freshwater Biology:

NGSS-MS-ESS2-4: Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

NGSS-5-ESS2-2: Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

NGSS-MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

NGSS-MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

NGSS-MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

NGSS-5-LS2-1: Develop a model to describe the movement of matter among plants, animals, Decomposers, and the environment.

HS-LS2-2: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

NGSS-HS-LS2-6: Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

NGSS-MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

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Geology & Engineering:

NGSS-MS-ESS2-3: Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

NGSS-MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

NGSS MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.

NGSS MS-EDD2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

NGSS MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the glow of energy that drives this process.

NGSS-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.

NGSS-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.

NGSS 4-ESS3-2: Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

Not Easy Being Green:

NGSS-MS-LS1-4: Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

NGSS-MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

NGSS-MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

NGSS-5-LS2-1: Develop a model to describe the movement of matter among plants, animals, Decomposers, and the environment.

HS-LS2-2: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

NGSS-HS-LS2-6: Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

NGSS-MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

Squid:

NGSS-MS-LS4-4: Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.

NGSS MS-LS1-1: Conduct an investigation to provide evidence that living things are made of cells, either one cell or different numbers and types of cells.

NGSS MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

NGSS 4-LS1-1: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

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Under Pressure:

NGSS-MS-ESS2-4: Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

NGSS-MS-ESS2-5: Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.

NGSS-MS-ESS2-6: Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

CCSS-5.MD.1: Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Archery:

NGSS-MS-PS2-2: Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the object and the mass of the object.

NGSS-MS-PS3-2: Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.

Orienteering:

NGSS-4-ESS2-2: Analyze and interpret data from maps to describe patterns of Earth's features.
Balloon Rescue
NGSS-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.

NGSS-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.

NGSS-MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

Building Support:

NGSS-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.

NGSS-3-5ETS1-2: 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.

Astronomy:

NGSS-MS-ESS1-1: Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

NGSS-5-ESS1-1: Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.

NGSS-MS-ESS1-2: Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

NGSS-MS-ESS1-3: Analyze and interpret data to determine scale properties of objects in the solar system.

Night Hike:
NGSS 4-LS1-2: Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

Owl Pellet Dissection:
NGSS 4-LS1-2: Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
NGSS-MS-LS1-4: Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.
NGSS-MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

Sources: http://www.nextgenscience.org/search-standards-dci
http://www.corestandards.org

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