NEXT GENERATION SCIENCE STANDARDS (NGSS)

Engineering Technology and Applications of Science

GRADES 6-8

NGSS.MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

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-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.MS-ETS1-4 (H3A) Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Physical Sciences

GRADES 6-8

NGSS.MS-PS3-1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.

NGSS.MS-PS3-3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

Life Sciences

GRADE K

NGSS.K-LS1-1

Use observations to describe patterns of what plants and animals (including humans) need to survive.

GRADE 1

NGSS.1-LS1-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow and meet their needs.

NGSS.1-LS3-1 Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

GRADE 2

NGSS.2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.

NGSS.2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

NGSS.2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.

GRADE 3

NGSS.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.

GRADES 6-8

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.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.

NGSS.MS-LS1-6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

NGSS.MS-LS1-7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

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-LS2-2 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.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.

EARTH AND SPACE SCIENCES

GRADE K

NGSS.K-ESS2-2 Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

NGSS.K-ESS3-1 Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

GRADE 1

NGSS.1-ESS1-2 Make observations at different times of year to relate the amount of daylight to the time of year.

GRADE 2

NGSS.2-ESS1-1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

GRADE 5

NGSS.5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.But individuals and communities are doing things to help protect Earth's resources and environments.

GRADES 6-8

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

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

NGSS SCIENCE AND ENGINEERING PRACTICES

Asking Questions and Defining Problems

Constructing Explanations and Designing Solutions

Analyzing and Interpreting Data

Planning and Carrying Out Investigations

Developing and Using Models

Engaging in Argument from Evidence

Obtaining, Evaluating and Communicating Information

Art

GRADE K

VA:Cr1.1.Ka Engage in exploration and imaginative play with materials.

VA:Cr2.1.Ka Through experimentation, build skills in various media and approaches to artmaking.