Elementary/Middle - 5th Grade Science

North Boone CUSD 200

UNITS (7/7 SELECTED)	SUGGESTED DURATION
Unit 1: Structure and Property of Matter	*25 lessons*
Unit 2: Physical and Chemical Changes	*20 lessons*
Unit 3: Plant and Animal Needs	*20 lessons*
Unit 4: Matter in Ecosystems	*25 lessons*
Unit 5: Interaction of Earth's Major Systems	*35 lessons*
Unit 6: The Solar System and Beyond	*20 lessons*
Unit 7: Exploratory Science Fair Project	*15 lessons*

Unit 1: Structure and Property of Matter

Elementary/Middle - 5th Grade Science - *Last Updated on March 21, 2019*

STANDARDS

5-PS1-1.: Develop a model to describe that matter is made of particles too small to be seen.

5-PS1-3.: Make observations and measurements to identify materials based on their properties.

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.

PRIORITY STANDARDS

5-PS1-3	Make observations and measurements to identify materials based on their properties.

DESIRED RESULTS

Enduring Understandings	Essential Question(s)
Matter of any type is made of particles even if not seen. The amount of matter is conserved when it changes form.	How can matter be changed and conserved? How do we learn about objects that are too small to be seen?

Students will know (Knowledge):	Students will be able to (Skills):
• Key concepts and vocabulary about matter, including: atom, molecule, element, buoyancy, density, volume, and periodic table • Students will understand matter can be described as a solid, liquid, or gas. • Understand matter is made up of smaller pieces.	• Use words to describe and explain structure and properties of matter • Students will design a model to show their understanding of the structure of the three states of matter. • Students will carry out investigations and make predictions to identify matter. • Students will develop a model solution to a problem involving metals.

Unit 2: Physical and Chemical Changes

Elementary/Middle - 5th Grade Science - *Last Updated on March 21, 2019*

STANDARDS

5-PS1-2.: Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conservered.ng mass and weight.]

5-PS1-4.: Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

PRIORITY STANDARDS

5-PS1-4	Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

DESIRED RESULTS

Enduring Understandings	Essential Question(s)
Matter of any type is made of particles even if not seen. The amount of matter is conserved when it changes form. When two or more different substances are mixed, a new substance may be formed.	How do particles combine to form the different kinds of matter ? What gives matter its unique qualities?

Students will know (Knowledge):	Students will be able to (Skills):
• Key concepts and vocabulary about physical science, including: mixture, solution, chemical property, reactant, and conservation of mass • That heating or cooling causes observable changes • The meaning of the following terms: chemical changes, physical changes, solution, mixture	• Use words to describe and explain physical and chemical changes • Show conservation of matter during a change in state • Students will be able to show that mass is conserved when new substances are formed • Determine whether a given unknown combination is a mixture or solution

Unit 3: Plant and Animal Needs

Elementary/Middle - 5th Grade Science - *Last Updated on March 21, 2019*

STANDARDS

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

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

PRIORITY STANDARDS

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

DESIRED RESULTS

Enduring Understandings	**Essential Question(s)**
Energy released from food was once energy from the sun. Food provides animals with the materials they need for body repair and growth. Plants acquire material for growth from air and water.	How are structure and function related in living things? How does energy move?

Students will know (Knowledge):	**Students will be able to (Skills):**
• And understand that plants and animals depend on each other. • And understand that plants and animals convert stored energy to maintain functions of life. • Key concepts and vocabulary for describing how plants obtain the materials they need for growth, including: photosynthesis, transpiration,cellular respiration	• Argue from evidence to show what plants need to survive. • Make models to compare and contrast the structures of a plant and an animal cell. • Support the idea that plants perform photosynthesis and cellular respiration and need both in order to survive. • Use words to describe and explain how plants obtain the materials they need for growth

Unit 4: Matter in Ecosystems

Elementary/Middle - 5th Grade Science - *Last Updated on March 21, 2019*

STANDARDS

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

PRIORITY STANDARDS

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

DESIRED RESULTS

Enduring Understandings	Essential Question(s)
The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs through what they eat.	What is the role of cycling matter in an ecosystem? How does energy move?

Students will know (Knowledge):	Students will be able to (Skills):
• And understand that the plants and animals in an ecosystem rely on each other in order to survive. • Key concepts and vocabulary used for describing the movement of matter among plants, animals, decomposers, and the environment, including: food chain, food web,water cycle	• Model how energy moves within a food chain and food web. • Explain how the different roles of organisms affect the stability of an ecosystem. • Make models of cycles in ecosystems and explain how the cycles affect the ecosystem. • Use words to describe the movement of matter among plants, animals, decomposers, and the environment

Unit 5: Interaction of Earth's Major Systems

Elementary/Middle - 5th Grade Science - *Last Updated on March 21, 2019*

STANDARDS

5-ESS2-1.: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

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.

5-ESS3-1.: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

PRIORITY STANDARDS

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.

DESIRED RESULTS

Enduring Understandings	**Essential Question(s)**
Water and gravity shape the land and affect living things.	Where is water found on the Earth? How does energy move?

Students will know (Knowledge):	**Students will be able to (Skills):**
• And understand that Earth has four major systems and that those systems interact to allow for plant and animal life to thrive. • Key concepts and vocabulary used to describe the distribution of water on Earth, including: atmosphere, biosphere, hydrosphere, geosphere	• Give examples of all four of the Earth's systems and how they interact. • Develop a model to show how the geosphere affects weather. • Obtain and evaluate information about Earth's water to communicate why desalination is important. • Explain how the water cycle affects Earth's systems. • Use words to describe the distribution of water on Earth

Unit 6: The Solar System and Beyond

Elementary/Middle - 5th Grade Science - *Last Updated on March 21, 2019*

STANDARDS

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.

5-ESS1-2.: Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

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

PRIORITY STANDARDS

5-ESS1-2	Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

Unit 6: The Solar System and Beyond

Elementary/Middle - 5th Grade Science - *Last Updated on March 21, 2019*

DESIRED RESULTS

Enduring Understandings	Essential Question(s)
The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center. The orbit of Earth, sun, and moon causes observable patterns including; day and night, seasonal changes, different positions of sun, moon, and stars. The sun is a star that appears larger and brighter than other stars because it is closer.	What is the relationship between the earth, moon and sun and their orbits? How is the revolution and rotation of the bodies in solar system explained? (sun, moon, planets)

Students will know (Knowledge):	Students will be able to (Skills):
• And understand the locations, interactions, and characteristics of objects in space. • Key concepts and vocabulary that describe patterns in Earth and Space, including, orbit, rotation, constellation	• Show how changes in Earth's position affect conditions at different locations on its surface. • Explain the repeating patterns of the appearance of the Moon by analyzing its movements. • Support an argument to explain how the force of gravity affects the location of objects in space. • Construct an argument that explains the reasons for the relative brightness of the Sun and other stars. • Use words to describe patterns in Earth and Space

Unit 7: Exploratory Science Fair Project

Elementary/Middle - 5th Grade Science - *Last Updated on March 21, 2019*

STANDARDS

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.

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.

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.

PRIORITY STANDARDS

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.

DESIRED RESULTS

Enduring Understandings	Essential Question(s)
Exploration and problem solving are at the heart of science. Problems are researched before beginning to design solutions. Possible solutions are tested to see how they perform under various conditions and results are communicated with others in order to improve solutions.	What is the process for exploring science and developing potential solutions to problems?

Students will know (Knowledge):	Students will be able to (Skills):
• Key components and vocabulary about conducting a scientific experiment, including: control, dependent and independent variables • The components of the scientific method, including: how to question, research, hypothesize, experiment, analyze, conclude • Effective research strategies and techniques	• Use words to describe conducting a scientific experiment • Research a scientific topic of interest • Carry out an experiment using the scientific method • Describe their project to their peers • Showcase their project and findings for the public