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2019
Teacher Resource
Guide for
K-8 Mississippi
Alternate Academic
Achievement
Standards (MS
AAAS) for Science



2019

Teacher Resource Guide for
K-8 Mississippi Alternate Academic
Achievement Standards for Science

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Acknowledgements

The Mississippi Department of Education gratefully acknowledges the hard work of the following individuals for their involvement in developing the *Teacher Resource Guide for K-8 Mississippi Alternate Academic Achievement Standards for Science*.

Sharon Coon	Mississippi Department of Education
Margaret Ellmer, Ph.D.	Mississippi Department of Education
Kellie Fondren	Mississippi State University
Madelyn Harris	Mississippi Department of Education
Myra Pannell, Ph.D.	Mississippi State University Research and Curriculum Unit
Allison Paige Pigott	Mississippi Department of Education
Bobby L. Richardson	Mississippi Department of Education
Jackie Sampsell, Ed.D.	Mississippi Department of Education
Denise Sibley	Mississippi State University Research and Curriculum Unit
Stacey Todd	Ocean Springs School District
Tiffany Withers	Rankin County School District

Introduction

Mission Statement

The Mississippi Department of Education (MDE) is dedicated to student success, which includes improving student achievement in science and establishing communication skills within a technological environment. The *Mississippi Alternate Academic Achievement Standards (MS AAAS) for Science* provides a consistent, clear understanding of what students are expected to know and be able to do by the end of the course. The purpose of the *Alternate Academic Achievement Standards* is to build a bridge from the content in the general education science framework to academic expectations for students with the most significant cognitive disabilities. The standards are designed to be rigorous and relevant to the real world, reflecting the knowledge and skills that students need for success in postsecondary settings.

Purpose

In an effort to closely align instruction for students with significant cognitive disabilities who are progressing toward postsecondary settings, the *MS AAAS for Science* includes course-specific standards for science. This document is designed to provide a resource for special education teachers in Grades K-8 with a basis for curriculum development and instructional delivery.

The *Teacher Resource Guide for K-8 MS AAAS for Science* contains prioritized content which is presented as a matrix to show the continuum of the concept across complexity levels. The matrix shows varying access points to the prioritized content. A student's progression through content contained in the matrix is intended to be fluid. It is not the intent, nor should it be practice, for a student to be exposed to content in a straight vertical line through one of the columns. Every student, regardless of disability, comes to the learning environment with a different set of prior knowledge and experience. For this reason, a student may be able to access some content from the middle complexity level and access other concepts at the more complex level. Teachers should evaluate a student's ability in relation to the content and select the entry point based on that evaluation. Students should not be locked into receiving exposure to all content at the same entry point.

Support Documents and Resources

The MDE Office of Special Education aims to provide local districts, schools, and teachers supporting documents to construct standards-based instruction and lessons, allowing them to customize content and delivery methods to fit each student's needs. The teacher resource guide includes suggested resources, instructional strategies, sample lessons, and activities. Additional sample activities and resources for selected standards may be added; this shall be a living document with ongoing updates based on educator feedback. The intent of these activities is to assist teachers in linking their instruction to the prioritized content. The teacher resource guide includes activity adaptations for students with a varying range of abilities within the classroom. The activities and adaptations provided are intended to serve as a model of how students participating in the Mississippi Academic Assessment Program–Alternate may receive academic instruction in science. There are many ways in which skills and concepts can be incorporated based on a student's individual learning styles and needs. Professional development efforts are aligned to the *Mississippi Alternate Academic Achievement Standards (MS AAAS) for Science* and delivered in accord with teacher resources to help expand expertise in delivering student-centered lessons.

Structure of the Teacher Resource Guide for K-8 MS AAAS for Science Document

Mississippi Alternate Academic Achievement content standard: The *MS AAAS for Science* is a general statement of what students with significant cognitive disabilities should know and be able to do because of instruction.

Performance Objectives: Statements that describe in precise, measurable terms what learners will be able to do at the end of an instructional sequence.

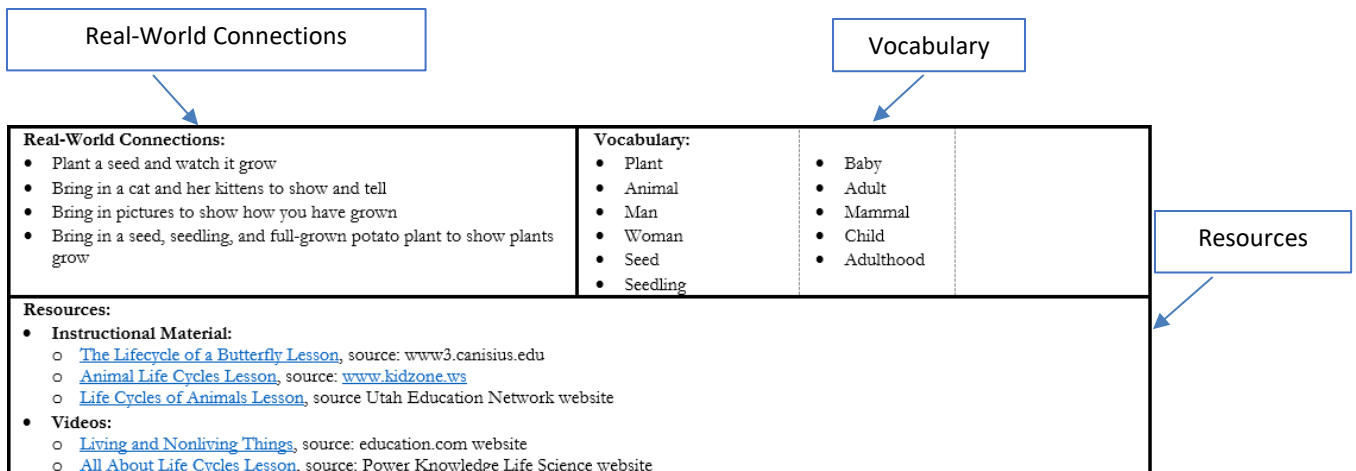
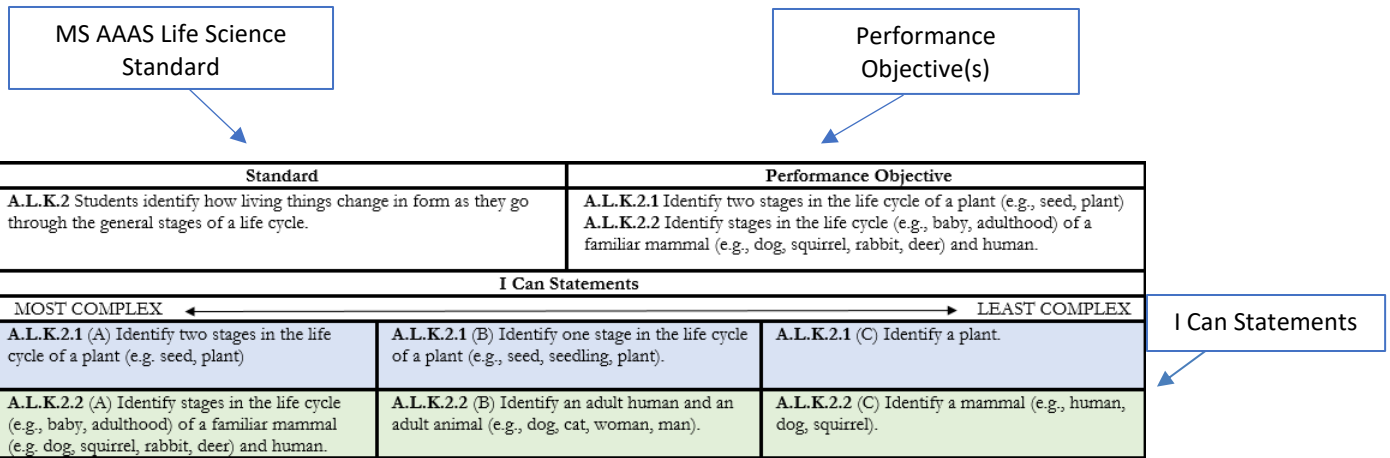
I Can Statement(s): Includes the Performance Objective(s) as the *Most Complex* and scaffolds the performance objectives two additional levels (B) and (C) to *Least Complex*. This matrix demonstrates the continuum of the concept across complexity levels. The purpose is to assist teachers in modifying to meet the unique, diverse needs of learners with significant cognitive disabilities.

Real-World Connections: One way to facilitate learning that is meaningful to students and prepares them for their professional lives outside of school. When teachers move beyond textbook or curricular examples and connect content learned in the classroom to real people, places, and events, students are able to see a greater relevance to their learning. Real-world connections are used to help students see that learning is not confined to the school, allow them to apply knowledge and skills to real-world situations, and personalize learning to increase and sustain student engagement.

Vocabulary: Includes a list of difficult or unfamiliar words.

Resources: Includes suggested resources, instructional strategies, lessons, and activities. Additional sample activities and resources for selected standards may be added; this shall be a living document with ongoing updates based on educator feedback. The intent of these activities is to assist teachers in linking their instruction to the prioritized content.

Structure of the Teacher Resource Guide for K-8 MS AAAS for Science Document (Graphic)



Levels of Support (LOS)

Students with significant cognitive disabilities require varying LOS to engage in academic content. The goal is to move the student along the continuum of assistance toward independence by decreasing the LOS provided and increasing student accuracy within the context of content to demonstrate progress. The following chart describes the continuum of LOS. Appropriate LOS are important to increase student engagement and student independence and to track student achievement and progress.

Level of Support	Definition	Example	Non-Example
Non-Engagement (N)	The student requires assistance from the teacher to initiate, engage, or perform; however, the student actively refuses or is unable to accept teacher assistance.	The student resists the teacher's physical assistance toward the correct answer.	The student does not look at the activity.
Physical Assistance (P)	The student requires physical contact from the teacher to initiate, engage, or perform.	The teacher physically moves the student's hand to the correct answer.	The teacher taps the correct answer and expects the student to touch where he/she tapped.
Gestural Assistance (G)	The student requires the teacher to point to the specific answer.	When presenting a choice of three pictures and asking the student which picture is a triangle, the teacher will point to or tap on the correct picture to prompt the student to indicate that picture.	The teacher moves the student's hand to gesture toward the right answer.
Verbal Assistance (V)	The student requires the teacher to verbally provide the correct answer to a specific item.	The teacher says, "Remember, the main character was George. Point to the picture of the main character."	The teacher asks "Who is the main character?" without providing the information verbally.
Model Assistance (M)	The student requires the teacher to model a similar problem/opportunity and answer prior to performance.	The teacher models one-to-one correspondence using manipulatives and then asks the student to perform a similar item.	The teacher completes the exact same activity as the student is expected to perform.
Independent (I)	The student requires no assistance to initiate, engage, or perform. The student may still require other supports and accommodations to meaningfully engage in the content but does not require assistance to participate and respond.	The teacher asks the student, "Who is the main character of the book?" and the student meaningfully responds without any prompting or assistance.	The teacher asks the student, "Who is the main character?" and points to the picture of the main character.

Teacher Resource Guide for Kindergarten MS AAAS for Science

GRADE: Kindergarten
 DOMAIN: Life Science
 CONCEPT: Hierarchical Organization

Standard		Performance Objective	
A.L.K.1A Students will identify living things and nonliving things.		A.L.K.1A.1 Differentiate between living things and nonliving things.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.K.1A (A) Differentiate between living and nonliving things	A.L.K.1A (B) Select two nonliving things.	A.L.K.1A (C) Select a living thing.	
Real-World Connections: <ul style="list-style-type: none"> • Discuss different objects • Have a living and nonliving scavenger hunt • Discuss how living things are different from nonliving things • Bring in a stethoscope and listen to your heartbeat • Add living things to the neighborhood or the school (e.g., plant trees, build a bird house, create bird feeders using pine cones, peanut butter and bird seed) 		Vocabulary <ul style="list-style-type: none"> • Living • Nonliving • Plants • Animals • Air • Food • Water • Stimuli • Senses • Grow • Death • Breathe 	
Resources <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Living vs. Nonliving: students explore the characteristics that distinguish living from nonliving things, source: PBS Learning Media website ○ Living vs. Nonliving Unit, source: Science A-Z website ○ A Science Mini-Unit: Living and Nonliving, source Kindergartenkindergarten.com • Videos: <ul style="list-style-type: none"> ○ Living or Nonliving, source: Betterlesson.com 			

GRADE: Kindergarten
 DOMAIN: Life Science
 CONCEPT: Hierarchical Organization

Standard		Performance Objective	
A.L.K.1B Students will identify how animals (including humans) use their physical features and their senses to learn about their environment.		A.L.K.1B.1 Identify the five senses and the related body part. A.L.K.1B.2 Select body parts animals use to obtain food and move.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.K.1B.1 (A) Identify the five senses and the related body part.	A.L.K.1B.1 (B) Identify the five senses.	A.L.K.1B.1 (C) Identify body parts related to the five senses.	
A.L.K.1B.2 (A) Select body parts animals use to obtain food and move.	A.L.K.1B.2 (B) Identify body parts an animal uses to eat.	A.L.K.1B.2 (C) Identify a body part of an animal related to movement.	
Real-World Connections: <ul style="list-style-type: none"> Sensory activities (e.g., smelling cotton balls with different odors, tasting sweet, sour, or bitter foods, listening to loud and soft sounds) Watch videos of animals Show and tell your favorite food Listen to music Play musical chairs Move to Learn Go on a scavenger hunt to locate things related to each of the five senses 		Vocabulary: <ul style="list-style-type: none"> Senses Sight Touch Taste Hearing Smelling Nose Mouth Ears Eyes Hands Legs Feet Arms Food Water Move 	
Resources: <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> My Senses Tell Me Lesson, source: American Association for the Advancement of Science Netlinks website Frisch's Outreach: Animal Senses (Pre-K-K) This lesson will allow students to explore their own senses and the senses of animals through activities and animal encounters, source: Cincinnati Zoo website. Videos: <ul style="list-style-type: none"> What do animals eat? Source: PBS.org 			

GRADE: Kindergarten

DOMAIN: Life Science

CONCEPT: Reproduction and Heredity

Standard		Performance Objective	
A.L.K.2 Students identify how living things change in form as they go through the general stages of a life cycle.		A.L.K.2.1 Identify two stages in the life cycle of a plant (e.g., seed, plant) A.L.K.2.2 Identify stages in the life cycle (e.g., baby, adulthood) of a familiar mammal (e.g., dog, squirrel, rabbit, deer) and human.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.K.2.1 (A) Identify two stages in the life cycle of a plant (e.g. seed, plant)	A.L.K.2.1 (B) Identify one stage in the life cycle of a plant (e.g., seed, seedling, plant).	A.L.K.2.1 (C) Identify a plant.	
A.L.K.2.2 (A) Identify stages in the life cycle (e.g., baby, adulthood) of a familiar mammal (e.g. dog, squirrel, rabbit, deer) and human.	A.L.K.2.2 (B) Identify an adult human and an adult animal (e.g., dog, cat, woman, man).	A.L.K.2.2 (C) Identify a mammal (e.g., human, dog, squirrel).	
Real-World Connections: <ul style="list-style-type: none"> Plant a seed and watch it grow Bring in a cat and her kittens to show and tell Bring in pictures to show how you have grown Bring in a seed, seedling, and full-grown potato plant to show plants grow 		Vocabulary: <ul style="list-style-type: none"> Plant Animal Man Woman Seed Seedling Baby Adult Mammal Child Adulthood 	
Resources: <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> The Lifecycle of a Butterfly Lesson, source: www3.canisius.edu Animal Life Cycles Lesson, source: www.kidzone.ws Life Cycles of Animals Lesson, source Utah Education Network website Videos: <ul style="list-style-type: none"> Living and Nonliving Things, source: education.com website All About Life Cycles Lesson, source: Power Knowledge Life Science website 			

GRADE: Kindergarten

DOMAIN: Life Science

CONCEPT: Ecology and Interdependence

Standard		Performance Objective	
A.L.K.3A Students will identify what animals and plants need to live and grow.		A.L.K.3A.1 Identify what plants and animals need to survive.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.K.3A.1 (A) Identify what plants and animals need to survive.	A.L.K.3A.1 (B) Match pictures of animals and plants with what they need to survive.	A.L.K.3A.1 (C) Identify three things that plants and animals need to survive.	
Real-World Connections: <ul style="list-style-type: none">• Take care of a class pet or pet at home• Take care of plants• Grow plants in a garden		Vocabulary <ul style="list-style-type: none">• Plant• Animal• Water• Food• Air• Shelter• Sunlight	
Resources <ul style="list-style-type: none">• Instructional Material:<ul style="list-style-type: none">○ The Needs of Living Things Lesson Plan: Students learn what animals and plants need to survive, how their habitats support these needs, and how organisms can change their environment, source: Mississippi Public Broadcasting○ The Needs of Living Things Lesson , source PBS Learning Media website○ Biology 101 The Basics—The Needs of Living Things Lesson, source KidsBiology.com○ Kindergarten Lesson: Plants, Insects, & Humans, source: Healthy Planet USA website• Videos:<ul style="list-style-type: none">○ The Needs of Living Things Animation Kindergarten Preschooler Kids [YouTube video]			

GRADE: Kindergarten

DOMAIN: Life Science

CONCEPT: Ecology and Interdependence

Standard		Performance Objective	
A.L.K.3B Students will identify organisms' interdependence on the environment in which they live.		A.L.K.3B.1 Match an animal to where it lives (e.g., fish to water, bears to forests).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.K.3B.1 (A) Match an animal to where it lives (e.g., fish to water, bears to forests).	A.L.K.3B.1 (B) Identify different animal habitats.	A.L.K.3B.1 (C) Sort pictures of similar animals into groups.	
Real-World Connections: <ul style="list-style-type: none">• Go fishing or hunting• Have a class pet		Vocabulary: <ul style="list-style-type: none">• Animal• Habitat• Forest• Water• Desert• Ocean• Lake	
Resources: <ul style="list-style-type: none">• Instructional Material:<ul style="list-style-type: none">○ Animal Habitat Lessons for Kindergarten, source: Sciencing.com website○ The Jackson Zoo website, source: www.jacksonzoo.org○ Animals, Plants, and Their Environment Lessons for Kindergarten, source: Arcadia High School website○ Habitats Lessons, source Science A-Z website• Videos:<ul style="list-style-type: none">○ Wild Kratts Exploring Animal Habitats [YouTube video], source: www.pbskids.org/wildkratts○ Habitat Song [YouTube video], source: Hopscotch on Patreon			

GRADE: Kindergarten
 DOMAIN: Life Science
 CONCEPT: Adaptations and Diversity

Standard		Performance Objective	
A.L.K.4 Students will identify some groups of animals that are no longer living (extinct) because they were unable to meet their needs for survival.		A.L.K.4.1 Identify examples of different animals that are extinct. A.L.K.4.2 Identify some present-day animals that resemble extinct animals (e.g., elephants resemble woolly mammoths).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.K.4.1 (A) Identify examples of different animals that are extinct.	A.L.K.4.1 (B) Recall the definition of extinct.	A.L.K.4.1 (C) Sort a group of pictures into animals and nonanimals.	
A.L.K.4.2 (A) Identify some present-day animals that resemble extinct animals (e.g., elephants resemble woolly mammoths).	A.L.K.4.2 (B) Identify the characteristic of present-day animals.	A.L.K.4.2 (C) From a group of pictures, identify present-day animals.	
Real-World Connections: <ul style="list-style-type: none"> Take a field trip to the Mississippi Museum of Natural Science Learn that things change over time 		Vocabulary: <ul style="list-style-type: none"> Extinct Animal Similar Different Woolly mammoth Elephant Dinosaur Saber-tooth tiger Tiger 	
Resources: <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> Mississippi Museum of Natural Science website, source: Mississippi Museum of Natural Science Foundation Project Based Learning—Endangered Animal Unit Part 1, source: Scholastic.com website How Animals Become Extinct Lesson, source: Ducksters Education website Videos: <ul style="list-style-type: none"> Top 10 Most Amazing Extinct Animals [YouTube video] Extinct and Endangered Animals [YouTube video] 			

GRADE: Kindergarten
 DOMAIN: Physical Science
 CONCEPT: Organizations of Matter and Chemical Interactions

Standard		Performance Objective
A.P.K.5A Students will identify the solid and liquid states of matter.		A.P.K.5A.1 Identify a solid. A.P.K.5A.2 Identify a liquid.
I Can Statements		
MOST COMPLEX ←		→ LEAST COMPLEX
A.P.K.5A.1 (A) Identify a solid.	A.P.K.5A.1 (B) State that a solid has a defined shape.	A.P.K.5A.1 (C) Determine if shape changes when touched or moved (e.g., rock and water in a bowl).
A.P.K.5A.2 (A) Identify a liquid.	A.P.K.5A.2 (B) Identify that liquid takes the shape of the container or flows freely.	A.P.K.5A.2 (C) Differentiate between objects that change shape easily.
Real-World Connections: <ul style="list-style-type: none"> • Life Skills • Daily Living Skills • Science Knowledge • Safety/Hazards • Cooking • Adaptive Skills 		Vocabulary: <ul style="list-style-type: none"> • Solid • Liquid • Shape • Flow
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Construction Theme Activities for Preschool, source: www.pre-kpages.com ○ Starfall Parent Teacher Center Resources, source: www.starfall.com ○ Matter Worksheets, source: Edhelper.com ○ Liquid or Solid Online book, source: www.tarheelreader.org ○ Anchors Away Science Instruction for Students with SCD, source: www.mast.ecu.edu ○ Lesson Introducing States of Matter, source: www.giftofcuriosity.com ○ Properties of Matter Kindergarten Lesson and Activity, source: Bright Hub Education website ○ States of Matter: Identifying Solids, Liquids, and Gases Lesson Plan, source: Education.com website ○ States of Matter Activities, source: Playdough to Plato website 		

GRADE: Kindergarten

DOMAIN: Physical Science

CONCEPT: Organization of Matter and Chemical Interactions

Standard		Performance Objective	
<p>A.P.K.5B Student will identify that solid objects can be constructed from a smaller set.</p>		<p>A.P.K.5B.1 Given pictures, other media sources, or basic shapes, construct or choose a constructed set that represents a larger object using a set of small objects (e.g., blocks, construction panels). A.P.K.5B.2 Identify smaller components of a large object. A.P.K.5B.3 Identify possible scenarios that may happen if some parts are missing or taken away.</p>	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
<p>A.P.K.5B.1 (A) Given pictures, other media sources, or basic shapes, construct or choose a constructed set represents a larger object using a set of small objects (e.g., blocks, construction panels).</p>	<p>A.P.K.5B.1 (B) Match illustrations to everyday objects/activities.</p>	<p>A.P.K.5B.1 (C) Identify two (2) items that relate.</p>	
<p>A.P.K.5B.2 (A) Identify smaller components of a large object.</p>	<p>A.P.K.5B.2 (B) Choose the materials required to build/construct a larger object.</p>	<p>A.P.K.5B.2 (C) Identify basic shapes.</p>	
<p>A.P.K.5B.3 (A) Identify possible scenarios that may happen if some parts are missing or taken away.</p>	<p>A.P.K.5B.3 (B) Identify the missing parts of an incomplete object/item.</p>	<p>A.P.K.5B.3 (C) Differentiate between whole and part.</p>	
<p>Real-World Connections:</p> <ul style="list-style-type: none"> • Problem Solving • Life Skills • Job Skills • Science Knowledge • Cooking 		<p>Vocabulary:</p> <ul style="list-style-type: none"> • Build • Component • Object • Construct • Build 	
<p>Resources:</p> <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ The Paper Change — In this science-integrated reading lesson, kindergarten students will learn about physical changes to matter. source: CPALMS.org website ○ Take It Apart Put It Together Lesson, source: Betterlesson.com website ○ The Magic School Bus Baked A Cake Lesson Plan, source: Scholastic.com website 			

GRADE: Kindergarten
 DOMAIN: Earth and Space Science
 CONCEPT: Earth and the Universe

Standard		Performance Objective	
A.E.K.8A Students will identify the seasonal changes on Earth.		A.E.K.8A.1 Identify the four seasons: spring, summer, fall, and winter.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.K.8A.1 (A) Identify the four seasons: spring, summer, fall, and winter.	A.E.K.8A.1 (B) Identify winter and summer.	A.E.K.8A.1 (C) Use pictures to identify changes in a season (e.g., trees lose leaves in winter).	
Real-World Connections: <ul style="list-style-type: none"> • How you dress • Sort clothes according to seasons • Discuss weather changes in each season 		Vocabulary: <ul style="list-style-type: none"> • Season • Summer • Winter • Fall • Spring 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Unit Plan Pack with Resources, source: Lincoln County Schools; Lincolnton, NC website ○ The Science of the Seasons for Kids, source: Ducksters Education website ○ What Causes the Seasons Online Lesson, source: University of Illinois Extension website ○ Daily and Seasonal Changes Teacher’s Guide, source Scholastic Canada LLC website ○ Lessons for Kindergarten on How to Use and Share Observations of Local Weather Conditions to Describe Patterns Over Time, source: BetterLesson.com website • Videos: <ul style="list-style-type: none"> ○ Weather, Different Seasons, Learn About Autumn, Winter, Spring, Summer, Preschool Activity Video [YouTube video] 			

GRADE: Kindergarten
 DOMAIN: Earth and Space Science
 CONCEPT: Earth and the Universe

Standard		Performance Objective	
A.E.K.8B Students will identify that heat and light on Earth are produced by the sun.		A.E.K.8B.1 Use pictures or other media sources to identify day and night. A.E.K.8B.2 Identify the properties of the sun (e.g., warmth and light). A.E.K.8B.3 Identify objects (e.g., umbrella, tree) that can shield the sun's head and light	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.K.8B.1 (A) Use pictures or other media sources to identify day and night.	A.E.K.8B.1 (B) Identify nighttime activities.	A.E.K.8B.1 (C) Identify daytime activities.	
A.E.K.8B.2 (A) Identify the properties of the sun (e.g., warmth and light).	A.E.K.8B.2 (B) List two adjectives to describe the sun.	A.E.K.8B.2 (C) List an adjective to describe the sun.	
A.E.K.8B.3 (A) Identify objects (e.g., umbrella, tree) that can shield the sun's heat and light.	A.E.K.8B.3 (B) Sort sun protection items from everyday items.	A.E.K.8B.3 (C) Identify one effect the sun has on us (e.g., sunburn).	
Real-World Connections: <ul style="list-style-type: none"> • Descriptive words to identify day and night • Associate items of clothing to time of day • Discuss effects of too much sun • Discuss effects of drinking too much water 		Vocabulary: <ul style="list-style-type: none"> • Heat • Light • Daytime • Umbrella • Sunscreen 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Home Science Tools: Lesson plans, science experiments, source: www.learning-center.homesciencetools.com ○ Identifying the sun as a source of light by observing shadows- Lesson Plan, source: The Science Education Resource Center (SERC) at Carleton College ○ Lesson on the Warmth of the Sun, source: American Association for the Advancement of Science's Science NetLinks website ○ Our Solar System Our Sun Lesson, source: Kids Astronomy website ○ All About the Sun Facts, source: Easyscienceforkids.com website 			

GRADE: Kindergarten
 DOMAIN: Earth and Space Science
 CONCEPT: Earth's Resources

Standard		Performance Objective	
A.E.K.10 Students will identify ways humans use Earth's resources.		A.E.K.10.1 Identify a type of the Earth's material as rock, sand, or water. A.E.K.10.2 Identify objects that could be recycled.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.K.10.1 (A) Identify a type of the Earth's material as rock, sand, or water.	A.E.K.10.1 (B) Identify one type of Earth's material.	A.E.K.10.1 (C) Sort types of Earth's materials (e.g., rock, sand, pictures of water)	
A.E.K.10.2 (A) Identify objects that could be recycled.	A.E.K.10.2 (B) Given a choice of two objects, identify an item that can be recycled (e.g., soda cans, bottles).	A.E.K.10.2 (C) Identify different materials (e.g., cloth, paper).	
Real-World Connections: <ul style="list-style-type: none"> Sort and recycle materials at school Discussion on items made from Earth's material 		Vocabulary: <ul style="list-style-type: none"> Recycle Material Rock Sand Water Earth 	
Resources: <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> Lesson Plan 3 Types of Resources, source: Education.com website Lesson for You and the Environment, source: Women's and Children's Health Network website Videos: <ul style="list-style-type: none"> Children's: Earth's Resources: Air, Water, Land: How to Save the Earth's Resources [YouTube Video] 			

Teacher Resource Guide for First Grade MS AAAS for Science

GRADE: First Grade
 DOMAIN: Life Science
 CONCEPT: Hierarchical Organization

Standard		Performance Objective	
A.L.1.1 Student will identify the basic structures of plants.		A.L.1.1 Identify different plant structures (e.g., roots, stems, leaves, flowers, fruits, seeds).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.1.1.1 (A) Identify different plant structures (e.g., roots, stems, leaves, flowers, fruits, seeds).	A.L.1.1.1 (B) Identify two (2) plant structures (e.g., roots, flowers).	A.L.1.1.1 (C) Select a picture of a plant.	
Real-World Connections: <ul style="list-style-type: none"> Plant a seed and watch it grow Eat root vegetables (e.g., carrots, potatoes) Eat green leafy vegetables (e.g., lettuce, spinach) Eat fruit (e.g., apples, peaches) Visit a garden to harvest vegetables (e.g., pick lettuce, pick tomatoes, pull up carrots, dig potatoes) 		Vocabulary <ul style="list-style-type: none"> Plant structure Root Stem Leaf Flower Fruit Seed 	
Resources <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> <i>Tops and Bottoms</i> (Stevens, 1995) (book) Facts About Plant Structure, source: Biology 4 Kids website Hands on Lessons and Activities About Plants, source: Ohio State University College of Education and Human Ecology Beyond Penguins website Worksheets on Parts of Plants, source: Education.com website Videos: <ul style="list-style-type: none"> From Seed to Flower, source: Mississippi Public Broadcasting Think Garden Plant Structure video, source: PBS Learning Media website 			

GRADE: First Grade

DOMAIN: Life Science

CONCEPT: Reproduction and Heredity

Standard		Performance Objective	
A.L.1.2 Students will identify general stages of a life cycle.		A.L.1.2.1 Identify the life cycle of a flower plant as it grows from seed to plant. A.L.1.2.2 Identify the life cycle (e.g., egg, larva, pupa, adult) of pollinating insects (e.g., bees, butterflies).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.1.2.1 (A) Identify the life cycle of a flowering plant as it grows from seed to plant.	A.L.1.2.1 (B) Identify two stages of the life cycle of a flower as it grows (e.g., seed, seedling).	A.L.1.2.1 (C) Select a plant that has flowers.	
A.L.1.2.2 (A) Identify the life cycle (e.g., egg, larva, pupa, adult) of pollinating insects (e.g., bees, butterflies).	A.L.1.2.2 (B) Identify two stages of the life cycle of pollinating insects (e.g., egg, larva, pupa, adult).	A.L.1.2.2 (C) Select a pollinating insect. (e.g., bee, butterfly).	
Real-World Connections: <ul style="list-style-type: none"> Plant a seed and watch it grow Go on a nature walk Visit a garden Watch the metamorphosis of a butterfly Watch tadpoles grow legs and turn into frogs 		Vocabulary: <ul style="list-style-type: none"> Egg Larva Pupa Adult Life cycle Seed Seedling Pollination 	
Resources <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> Butterfly kit Life Cycle Facts and Worksheets, source: Kidskonnnect.com website Birth, Growth and Development Lesson Plan, source: PBS Learning Media website Life Cycle Lesson Plan, source: Home Science Tools website Video: <ul style="list-style-type: none"> Metamorphosis: Change of Plans, source: Mississippi Public Broadcasting 			

GRADE: First Grade

DOMAIN: Life Science

CONCEPT: Ecology and Interdependence

Standard		Performance Objective	
A.L.1.3A Students will identify what plants need from the environment to grow.		A.L.1.3A.1 Identify basic plant needs (e.g., air, water, sunlight, soil, space).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.1.3A.1 (A) Identify basic plant needs (e.g., air, water, sunlight, soil, space).	A.L.1.3A.1 (B) State two to three (2-3) things plants need to survive (e.g., air, water, sunlight, soil, space).	A.L.1.3A.1 (C) Choose basic plant needs from a group of pictures.	
Real-World Connections: <ul style="list-style-type: none">• Grow a plant at home or in the classroom• Take care of plants at home or in the classroom		Vocabulary: <ul style="list-style-type: none">• Air• Water• Sunlight• Soil• Space• Plant• Survive	
Resources <ul style="list-style-type: none">• Instructional Material:<ul style="list-style-type: none">○ MS State University Extension Service, source: Mississippi State University Extension website○ Pondering Plants First Grade Science Exploration Lesson, source: LifeLab.org website○ What Do Plants Need to Grow Lesson, source: California Foundation for Agriculture in the Classroom website○ The Needs of Living Things Lesson — students learn what animals and plants need to survive, how their habitats support these needs, and how organisms can change their environment, source: PBS Learning Media website• Videos:<ul style="list-style-type: none">○ What Plants Need to Grow [YouTube video]			

GRADE: First Grade

DOMAIN: Life Science

CONCEPT: Ecology and Interdependence

Standard		Performance Objective	
A.L.1.3B Students will identify the interdependence of flowering plants and pollinating insects.		A.L.1.3B.1 Identify bees and butterflies as pollinating insects. A.L.1.3B.2 Identifying pollinating insects' role in transferring pollen in flowering plants to enable plants to produce seeds.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.1.3B.1 (A) Identify bees and butterflies as pollinating insects.	A.L.1.3B.1 (B) Define a pollinator.	A.L.1.3B.1 (C) Identify a bee and a butterfly.	
A.L.1.3B.2 (A) Identify pollinating insects' role in transferring pollen in flowering plants to enable plants to produce seeds.	A.L.1.3B.2 (B) Identify characteristics of insects and plants responsible for pollination.	A.L.1.3B.2 (C) Identify insects that serve as plant pollinators.	
Real-World Connections: <ul style="list-style-type: none"> Plant a class garden and look for pollinators 		Vocabulary <ul style="list-style-type: none"> Pollinate Pollinator Insect Flowering plants Characteristics 	
Resources <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> Pollination Information, source: Mississippi State University Extension website Pollinators, source: www.kidsgrowingstrong.org We Love Bees Lesson, source: education.com website Themes for Bees, source: Bright Hub Education website Videos: <ul style="list-style-type: none"> Pollination [YouTube video] 			

GRADE: First Grade

DOMAIN: Life Science

CONCEPT: Adaptations and Diversity

Standard		Performance Objective	
A.L.1.4 Students will identify ways plants adapt to their environment in order to survive.		A.L.1.4.1 Match a plant to its distinct environment (e.g., cactus to desert). A.L.1.4.2 Match a change in an environment to a response in a plant (e.g., in cooler weather, leaves change colors).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.1.4.1 (A) Match a plant to its distinct environment (e.g., cactus to desert).	A.L.1.4.1 (B) Identify characteristics of distinct environments.	A.L.1.4.1 (C) Identify plants.	
A.L.1.4.2 (A) Match a change in an environment to a response in a plant (e.g., in cooler weather, leaves change colors).	A.L.1.4.2 (B) Identify responses in plants (e.g., wilt, grows, dies, loses leaves, produces fruit).	A.L.1.4.2 (C) Identify the four seasons using pictures.	
Real-World Connections: <ul style="list-style-type: none"> • Change in seasons • Change in color of leaves • Plants lose their leaves • Production of flowers and seeds 		Vocabulary: <ul style="list-style-type: none"> • Forest • Pond • Desert • Lake • Seasons—winter, spring, summer, fall/autumn • Leaves 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Survival! Adaptations Plants Adapt to their Habitats Lesson, source: Honolulu Zoo Society Web Lessons website ○ Plant Adaptations Lesson, source: National Park Service website ○ Living Life as a Plant Lesson, source: PBS Learning Media website 			

GRADE: First Grade

DOMAIN: Physical Science

CONCEPT: Motions, Forces, and Energy

Standard		Performance Objective	
A.P.1.6A Students will demonstrate a basic understanding that light is required to make objects visible.		A.P.1.6A.1 Identify objects that give off light (e.g., sun, light bulb). A.P.1.6A.2 Identify whether light passes through an object (e.g., glass, cardboard). A.P.1.6A.3 Determine how objects create shadows.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.1.6A.1 (A) Identify objects that give off light (e.g., sun, light bulb).	A.P.1.6A.1 (B) Point to the object/picture that gives off light (e.g., candle, flashlight, light bulb, sun)	A.P.1.6A.1 (C) Identify the presence of light.	
A.P.1.6A.2 (A) Identify whether light passes through an object (e.g., glass, cardboard).	A.P.1.6A.2 (B) Determine if light is seen through an object.	A.P.1.6A.2 (C) Identify the absence of light.	
A.P.1.6A.3 (A) Determine how objects create shadows.	A.P.1.6A.3 (B) Use objects to create a shadow.	A.P.1.6A.3 (C) Identify a shadow.	
Real-World Connections: <ul style="list-style-type: none"> • Life skills • Job skills • Weather • Science knowledge 		Vocabulary: <ul style="list-style-type: none"> • Sun • Light Bulb • Shadow • Flashlight • Candle • Absence • Presence 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ How does light help me see, source: Next Generation Science Storylines website ○ Science of Light, source: BetterLesson.com website ○ Visibility of Light Lesson, source: Siemens Stem Day website ○ Light It Up Light Waves Lesson, source: BetterLesson.com website • Videos: <ul style="list-style-type: none"> ○ Light Energy Sources: Lesson for Kids, source: Study.com website ○ A Scientific Investigation of Light video, source: Teaching Channel website 			

GRADE: First Grade
 DOMAIN: Physical Science
 CONCEPT: Motions, Forces, and Energy

Standard		Performance Objective	
A.P.1.6B Students will identify basic actions that form sound.		A.P.1.6B.1 Identify that vibrations create sound (e.g., pluck a guitar string). A.P.1.6B.2 Identify that sound can create vibrations (e.g., feeling sound through a speaker).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.1.6B.1 (A) Identify that vibrations create sound (e.g., pluck a guitar string).	A.P.1.6B.1 (B) Create vibration to produce sound.	A.P.1.6B.1 (C) Touch objects that can produce sound.	
A.P.1.6B.2 (A) Identify that sound can create vibrations (e.g., feeling sound through a speaker).	A.P.1.6B.2 (B) Identify common causes of vibration.	A.P.1.6B.2 (C) Identify the presence of vibration.	
Real-World Connections: <ul style="list-style-type: none"> • Job skills • Daily living • Hearing safety • Science knowledge • Communication skills 		Vocabulary: <ul style="list-style-type: none"> • Vibration • Sound • Frequency • Produce 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Waves: Light and Sound Lessons, source: Alvord United School District website ○ Energy All Around Us: Light, Heat, and Sound Lesson, source: SEDL Mosaic website ○ Learning About Sound Lesson, source: Playdough to Plato website ○ Sound First Grade Science Lesson, source: Brown Bag Teacher website • Videos: <ul style="list-style-type: none"> ○ Sound for Kids — Sound Waves and Vibrations [YouTube Video] 			

GRADE: First Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth's Systems and Cycles

Standard		Performance Objective	
A.E.1.9A Student will identify basic patterns of weather.		<p>A.E.1.9A.1 Observe local weather conditions (e.g., temperature, precipitation) to identify weather patterns.</p> <p>A.E.1.9A.2 Identify types of short-term weather (e.g., rain, snow, clear).</p> <p>A.E.1.9A.3 Describe changes in a season (e.g., some trees lose leaves in the winter).</p> <p>A.E.1.9A.4 Identify a weather condition that is a problem for human activities (e.g., rain).</p>	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.1.9A.1 (A) Observe local weather conditions (e.g., temperature, precipitation) to identify weather patterns.	A.E.1.9A.1 (B) Sort pictures into weather condition categories (e.g., hot, cold)	A.E.1.9A.1 (C) Use illustrations to identify two local weather conditions (e.g., hot, rain).	
A.E.1.9A.2 (A) Identify types of short-term weather (e.g., rain, snow, clear).	A.E.1.9A.2 (B) Match short-term weather symbols to illustrations.	A.E.1.9A.2 (C) Identify current weather conditions (e.g., clear, rain).	
A.E.1.9A.3 (A) Describe changes in a season (e.g., some trees lose leaves in the winter).	A.E.1.9A.3 (B) Sort illustrations of seasonal changes by season.	A.E.1.9A.3 (C) Use pictures to identify changes in seasons.	
A.E.1.9A.4 (A) Identify a weather condition that is a problem for human activities (e.g., rain).	A.E.1.9A.4 (B) Match illustration of activity to weather condition (e.g., rain to child with umbrella).	A.E.1.9A.3 (C) Point to illustration of a weather condition (e.g., point to picture of snow).	
<p>Real-World Connections:</p> <ul style="list-style-type: none"> • Human activities • Discussion on the four seasons • Discussion on weather impacts • Discussion on weather changes with seasons 		<p>Vocabulary</p> <ul style="list-style-type: none"> • Seasons • Rain • Snow • Weather pattern 	
<p>Resources</p> <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ All About Weather Activities and Ideas, source: TheFirstGradeParade.org website ○ What's The Weather First Grade Lesson, source Trinity University Digital Commons website ○ Weather 1: Weather Patterns Lesson, source: American Association for the Advancement of Science's Science NetLinks website • Videos: <ul style="list-style-type: none"> ○ Kids Vocabulary — Weather Video [YouTube Video] 			

GRADE: First Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth's Systems and Cycles

- [Learn the Weather for Kids- Weather Types](#) [YouTube Video] (lower level)
- [NOAA- Weather Systems: lessons, activities and resources](#), source: NOAA.gov

GRADE: First Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth's Systems and Cycles

Standard		Performance Objective	
A.E.1.9B Students will identify and classify bodies of water and land masses on Earth using drawings, maps, or physical models.		A.E.1.9B.1 Classify regions of Earth as land or bodies of water.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.1.9B.1 (A) Classify regions of Earth as land or bodies of water.	A.E.1.9B.1 (B) Use observational skills to identify characteristics of oceans, seas, rivers, streams, lakes, ponds, and glaciers.	A.E.1.9b.1 (C) Identify oceans, seas, rivers, streams, lakes, and ponds as bodies of water.	
Real-World Connections: <ul style="list-style-type: none">• Globes• Map		Vocabulary: <ul style="list-style-type: none">• Region• Glacier• Pond• Lake• River• Stream	
Resources: <ul style="list-style-type: none">• Instructional Material:<ul style="list-style-type: none">○ Landforms and Bodies of Water, source: Pinterest Ideas (login required)○ Mapping Landforms and Water Bodies Lesson Plans, source: PBS○ Identifying Landforms and Bodies of Water on a Map Lesson, source: NASA Education website○ Bodies of Water and Land Forms Lesson, source: NRCS.USDA.gov website			

GRADE: First Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth's Resources

Standard		Performance Objective	
A.E.1.10 Students will demonstrate an understanding of human dependence on clean and renewable water resources.		A.E.1.10.1 Identify the impact of human pollution on water in the local environment. A.E.1.10.2 Describe possible solutions to human pollution on the local environment.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.1.10.1 (A) Identify the impact of human pollution on water in the local environment.	A.E.1.10.1 (B) Match pollution to its effect on water.	A.E.1.10.1 (C) Identify a type of pollution.	
A.E.1.10.2 (A) Describe possible solutions to human pollution on the local environment.	A.E.1.10.2 (B) Match each solution to the pollution problem it solves.	A.E.1.10.2 (C) Sort pictures of pollution.	
Real-World Connections: <ul style="list-style-type: none"> • School campus trash pick-up • Park visit • Field trip to a lake and stream 		Vocabulary: <ul style="list-style-type: none"> • Pollution • Solution • Environment • Impact 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Water Pollution for Kids [YouTube Video] ○ Water Pollution and Filtration Science Experiments for Kids, source: TheWaterProject.org ○ Renewable and Nonrenewable Resources, source: Penn State Extension Education website • Videos: <ul style="list-style-type: none"> ○ Water Pollution for Kids [YouTube Video] ○ Why Care about Water? National Geographic Video, source: www.nationalgeographic.com 			

Teacher Resource Guide for Second Grade MS AAAS for Science

GRADE: Second Grade
 DOMAIN: Life Science
 CONCEPT: Hierarchical Organization

Standard		Performance Objective	
A.L.2.1 Students will identify the classification of animals based on physical characteristics.		A.L.2.1.1 Differentiate between animals with backbones (vertebrates) and animals without backbones (invertebrates). A.L.2.1.2 Categorize vertebrates (e.g., mammals, fish, birds, amphibians, reptiles) based on their physical characteristics.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.2.1.1 (A) Differentiate between animals with backbones (vertebrates) and animals without backbones (invertebrates).	A.L.2.1.1 (B) Sort pictures to identify animals that do not have a backbone (invertebrates).	A.L.2.1.1 (C) Select a picture of an animal that has a backbone (vertebrate).	
A.L.2.1.2 (A) Categorize vertebrates (e.g., mammals, fish, birds, amphibians, reptiles) based on their physical characteristics.	A.L.2.1.2 (B) Sort pictures to identify two different kinds of vertebrates.	A.L.2.1.2 (C) Select pictures of mammals.	
Real-World Connections: <ul style="list-style-type: none"> • Visit a zoo or aquarium • Visit a farm • Have a veterinarian come in as a guest speaker • Bring in an insect for show and tell • Share pictures of your favorite pet 		Vocabulary <ul style="list-style-type: none"> • Backbone • Vertebrates • Invertebrates • Characteristics • Feathers • Fur • Scales • Cold blooded • Warm blooded • Mammals • Fish • Amphibians • Reptiles • Birds 	
Resources <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Animal Classification Lesson Plan, source: Discoveryeducation.com website ○ Lesson Animal Classification, source: Mpalalive.org Pearls of the Planet website ○ Classifying Animals Lesson, source: Mensaforkids.org website ○ What Am I? Classifying Living Things, source CPALMS.org website 			

GRADE: Second Grade
 DOMAIN: Life Science
 CONCEPT: Reproduction and Heredity

Standard		Performance Objective	
A.L.2.2 Students will demonstrate an understanding of how living things change in form as they go through the general stages of a life cycle.		A.L.2.2.1 Identify different stages of the life cycle of trees (e.g., pines, oaks) to compare how trees change and grow over time. A.L.2.2.2 Sequence the life cycle of an animal (e.g., dog, from puppy, adult, death).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.2.2.1 (A) Identify different stages of the life cycle of trees (e.g., pines, oaks) to compare how trees change and grow over time.	A.L.2.2.1 (B) Differentiate between tree saplings (i.e., young trees) and seed-bearing trees (i.e., mature trees).	A.L.2.2.1 (C) Select a seed-bearing (i.e., mature) tree.	
A.L.2.2.2 (A) Sequence the life cycle of an animal (e.g., dog, from puppy, adult, death).	A.L.2.2.2 (B) Differentiate between animals in different life cycle stages (e.g., baby vs. adult).	A.L.2.2.2 (C) Select a baby animal (e.g. a puppy, a kitten).	
Real-World Connections: <ul style="list-style-type: none"> Visit the humane society to observe animals (e.g., cats, kittens, dogs, puppies) Bring in specialists to share information about various life cycle stages of plants and animals (e.g., veterinarian, wildlife specialist, forester) 		Vocabulary: <ul style="list-style-type: none"> Seed Sapling Seed bearing Sprout Fruit Growth Life cycle Stages Germination Pollination 	
Resources <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> Birth, Growth, and Development Lesson plan that helps students learn about biological life cycles by examining the developmental stages of animals, source: PBS Learning Media website Animal Life Cycles Lesson, source: Kidzone Worksheets for Children website Life Cycles of Frogs Dragonflies and Butterflies Lesson, source: PBS Learning Media website 			

GRADE: Second Grade

DOMAIN: Life Science

CONCEPT: Ecology and Interdependence

Standard		Performance Objective	
A.L.2.3A Students will identify the interdependence of animals and the environment in which they live.		A.L.2.3A.1 Classify animals to distinct environments (e.g., fish to water). A.L.2.3A.2 Classify changes in an environment to animals' responses (e.g., winter coat/shedding of fur, migration, preparing for hibernation).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.2.3A.1 (A) Classify animals to distinct environments (e.g., fish to water).	A.L.2.3A.1 (B) Match herbivores to their food sources. Identify characteristics of distinct environments.	A.L.2.3A.1 (C) Identify animals.	
A.L.2.3A.2 (A) Classify changes in an environment to animals' responses (e.g., winter coat/shedding of fur, migration, preparing for hibernation).	A.L.2.3A.2 (B) Identify responses in animals (e.g., lose fur, migration, hibernation).	A.L.2.3A.2 (C) Identify the four seasons using pictures.	
Real-World Connections: <ul style="list-style-type: none"> • Change in seasons • Appropriate dress according to the weather • Bird migration • Polar bears and the melting sea ice • Conservation • Habitat destruction 		Vocabulary: <ul style="list-style-type: none"> • Seasons—winter, spring, summer, fall/autumn • Characteristics • Migration • Hibernation • Environment • Response 	
Resources <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ The Environment: Living and Nonliving Things Lesson, source: Victoria Australia Department of Education and Training website ○ How to Describe the Interdependence of Living Things, source: Sciencing.com website ○ What's Your Habitat Lesson, source: National Wildlife Federation website 			

GRADE: Second Grade

DOMAIN: Life Science

CONCEPT: Ecology and Interdependence

Standard		Performance Objective	
A.L.2.3B Students will identify examples of the interdependence of living things.		A.L.2.3B.1 Use models to identify how animals are dependent upon plants (e.g., honey bees collect pollen and nectar as food for the entire ecology, and as they do, they pollinate plants).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.2.3B.1 (A) Use models to identify how animals are dependent upon plants (e.g., honey bees collect pollen and nectar as food for the entire colony, and as they do, they pollinate plants).	A.L.2.3B.1 (B) Match herbivores to their food sources.	A.L.2.3B.1 (C) Identify herbivores.	
Real-World Connections: <ul style="list-style-type: none">• Plant a class garden and observe the pollinators• Connection between pollinators and food production• Cook with honey or eat honey in the classroom• Prepare and eat plants (e.g., salad, vegetables, fruit salad)• Taste various foods at a tasting fair		Vocabulary <ul style="list-style-type: none">• Herbivores• Pollinate• Nectar• Honey bee• Colony• Relationship	
Resources <ul style="list-style-type: none">• Instructional Material:<ul style="list-style-type: none">○ Interdependence of Living Things Lesson, source: CK12.org website○ How Do Plants and Animals Need Each Other, source: k12Reach.org website			

GRADE: Second Grade
 DOMAIN: Life Science
 CONCEPT: Adaptations and Diversity

Standard		Performance Objective	
A.L.2.4 Students will identify various ways animals adapt to their environment in order to survive.		A.L.2.4.1 Identify animals that have adapted to their environment for survival and describe the adaptation (e.g., ducks use webbed feet to swim in lakes and ponds; giraffes use their long necks to reach food source).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.2.4.1 (A) Identify animals that have adapted to their environment for survival and describe the adaptation (e.g., ducks use webbed feet to swim in lakes and ponds; giraffes use their long necks to reach food source).	A.L.2.4.1 (B) Match animals with their adaptations.	A.L.2.4.1 (C) Identify animals.	
Real-World Connections: <ul style="list-style-type: none"> • Discuss adaptations such as teeth, claws, thick fur, waterproof feathers, webbed feet, bills, and beaks • Compare animal (including human) adaptations • Visit a zoo and compare the different adaptations between the animals • Observe animals that are better adapted to the areas where they live (e.g., crows, robins, coyotes, pigeons, sparrows, etc. are better adapted to living in urban environments where other animals are not) 		Vocabulary: <ul style="list-style-type: none"> • Adapt/adaptation • Environment • Survive/survival • Webbed • Food source • Lake • Pond • Ocean 	
Resources <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Top 10 Animal Adaptations Lessons, source: AnimalPlanet.com website 			

GRADE: Second Grade
 DOMAIN: Physical Science
 CONCEPT: Organization of Matter and Chemical Interactions

Standard		Performance Objective	
A.P.2.5 Students will distinguish basic properties of matter.		A.P.2.5.1 Sort matter as solids or liquids A.P.2.5.2 Identify whether a substance has been melted or frozen (e.g., water, ice cream, popsicle).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.2.5.1 (A) Sort matter as solids or liquids	A.P.2.5.1 (B) Select a solid or a liquid.	A.P.2.5.1 (C) Identify a solid.	
A.P.2.5.2 (A) Identify whether a substance has been melted or frozen (e.g., water, ice cream, popsicle).	A.P.2.5.2 (B) Select a frozen or melted item.	A.P.2.5.2 (C) Identify a frozen item.	
Real-World Connections: <ul style="list-style-type: none"> • Cooking • Life skills • Job skills • Daily living skills • Safety/hazards • Science knowledge 		Vocabulary: <ul style="list-style-type: none"> • Frozen • Melt • Solid • Liquid 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Matter and Its Properties Unit, source: Rampages Connected Learning Community for VCU ○ Three States of Matter Facts and Info, source: Brent International School second-grade website ○ Structure and Properties of Matter 2nd Grade Teacher's Guide, source: McCracken County Schools (Paducah, Kentucky) website ○ Science for Kids: What Are the 3 States of Matter Lesson, source: Sciencing.com website • Videos: <ul style="list-style-type: none"> ○ Solid and Liquid First and Second Grade Science for Kids, source: HomeschoolPop.org 			

GRADE: Second Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth and the Universe

Standard		Performance Objective	
A.P.2.6 Students will demonstrate a basic understanding of how the motion of objects is affected by pushes, pulls, and friction.		A.P.2.6.1 Identify examples of push and pull. A.P.2.6.2 Describe how friction affects the movement of an object. A.P.2.6.3 Identify forces that affect the rate of speed of an object (e.g., uphill slower, downhill faster).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.2.6.1 (A) Identify examples of push and pull.	A.P.2.6.1 (B) Identify the direction of the motions push and pull.	A.P.2.6.1 (C) Identify if an object is pushed or pulled.	
A.P.2.6.2 (A) Describe how friction affects the movement of an object.	A.P.2.6.2 (B) Select the type of object that creates friction.	A.P.2.6.2 (C) Identify an object as rough or smooth.	
A.P.2.6.3 (A) Identify forces that affect the rate of speed of an object (e.g., uphill slower, downhill faster).	A.P.2.6.3 (B) Identify if a change in rate of speed.	A.P.2.6.3 (C) Identify rate of speed (e.g., fast or slow)	
Real-World Connections: <ul style="list-style-type: none"> • Life skills • Job skills • Science knowledge • Safety • Leisure/recreation • Transportation • Problem solving 		Vocabulary: <ul style="list-style-type: none"> • Friction • Push • Pull • Force • Speed 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Activities for a Construction Theme, source Pre-KPages.com ○ Exploring Pushes and Pulls Lesson Plan, source: Ruth Patrick Science Education Center University of South Carolina Aiken ○ How Do Forces Affect Motion Lesson, source: Caterpillar Visitors Center (Peoria, Illinois) Website ○ How Does Force Affect Motion Article, source: National Science Teachers Association NSTA Library 			

GRADE: Second Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth and the Universe

Standard		Performance Objective	
A.E.2.8 Students will identify appearance, movements, and patterns of the sun, moon, and stars.		A.E.2.8.1 Identify stars that can be observed in the night sky. A.E.2.8.2 Demonstrate an understanding that the Sun is the Earth's closest star. A.E.2.8.3 Classify day/night in relation to an understanding of sunrise and sunset. A.E.2.8.4 Identify characteristics of the moon, planets, and the Sun. A.E.2.8.5 Identify tools scientist use to explore space.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.2.8.1 (A) Identify stars that can be observed in the night sky.	A.E.2.8.1 (B) Sort images with a star.	A.E.2.8.1 (C) Match the images of a star to a picture of a star.	
A.E.2.8.2 (A) Demonstrate an understanding that the Sun is the Earth's closest star.	A.E.2.8.2 (B) Identify the sun in pictures in relation to Earth.	A.E.2.8.2 (C) Match the images of a sun to a picture of a sun.	
A.E.2.8.3 (A) Classify day/night in relation to an understanding of sunrise and sunset.	A.E.2.8.3 (B) Use models to demonstrate how earth rotates on its axis resulting in day and night (e.g. sunrise, sunset).	A.E.2.8.3 (C) Identify a shadow (day and night).	
A.E.2.8.4 (A) Identify characteristics of the moon, planets, and the Sun.	A.E.2.8.4 (B) Match pictures to the characteristics of the moon, planets, and the sun.	A.E.2.8.4 (C) Sort images of moon, planets, and sun.	
A.E.2.8.5 (A) Identify tools scientist use to explore space.	A.E.2.8.5 (B) Match a tool used to explore space to its use.	A.E.2.8.5 (C) Sort tools that scientist use to explore space.	
Real-World Connections: <ul style="list-style-type: none"> • Sky observation/discussion • Video on sky/sun • Tool demonstration • Outside activities • Nighttime demonstration 		Vocabulary: <ul style="list-style-type: none"> • Star • Sun • Earth • Telescope • Explore • Rotate • Axis • Compass • Rovers 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ The Sun, Moon, and Stars: Patterns of Apparent Motion Science Games, source: Legends of Learning website ○ Patterns In the Universe Lesson Plan- Sun, Moon and Stars: identifying appearance, movement and patterns, source: www.educationcloset.com ○ The Sun, Moon, and Stars: Patterns of Apparent Motion Science Games, source: Legends of Learning website ○ The Sun, Moon, and Stars Enable Life on Earth Articles, source: Accuweather.com website 			

GRADE: Second Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth and the Universe

- o [Space: Patterns in the Sky Lessons](#), source: BetterLesson.com website

GRADE: Second Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth's Resources

Standard		Performance Objective	
A.E.2.10.1 Students will identify how humans use Earth's resources.		A.E.2.10.1 Identify the properties of Earth materials including rocks, soils, sand, and water. A.E.2.10.2 Classify everyday objects that are resources from the Earth (e.g., drinking water, granite countertops, clay dishes, wood furniture, gas grill). A.E.2.10.3 Identify ways Earth materials are used (e.g., soil and water to grow plants, rocks to make roads, walls, or building, or sand to make glass).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.2.10.1 (A) Identify the properties of Earth materials including rocks, soils, sand, and water.	A.E.2.10.1 (B) Use observations to identify properties of rocks (e.g., color, grain, patterns), soils (e.g., hummus, clay), and sand (e.g., grain).	A.E.2.10.1 (C) Use models or pictures to identify a rock, soil, and sand.	
A.E.2.10.2 (A) Classify everyday objects that are resources from the Earth (e.g., drinking water, granite countertops, clay dishes, wood furniture, or gas grill).	A.E.2.10.2 (B) Match the Earth materials to the way they could be used (e.g., soil and water to grow plants, rocks to build roads).	A.E.2.10.2 (C) Identify a natural resource.	
A.E.2.10.3 (A) Identify ways Earth materials are used (e.g., soil and water to grow plants, rocks to make roads, walls, or buildings, or sand to make glass).	A.E.2.10.3 (B) Match the earth's materials to the way they can be used.	A.E.2.10.3 (C) Identify pictures of earth's materials being used.	
Real-World Connections: <ul style="list-style-type: none"> • Rock discovery/sort • Nature walk • Make art project using rocks, soils, sand, and water • Trip to Home Depot • Projects using water, sand and rocks 		Vocabulary: <ul style="list-style-type: none"> • Granite • Clay • Rock • Soil • Sand • Properties • Observations • Classify • Resource 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Natural Resources on Earth Lesson Plan, source: NASA website 			

- [Materials Humans Use Lesson](#), source: CK12.org website
- [Natural Resources of the Earth Lesson](#), source: EcofriendlyKids.co.uk website
- [Natural Resources Unit](#), source: Virginia Tech Department of Agricultural and Applied Economics Extension website
- **Videos:**
 - [Natural Resources of the Earth Science Video for Kids](#) [YouTube Video]
 - [Children's: Earth's Resources - Air, Water, Land. How to Save the Earth's Resources](#) [YouTube Video]

Teacher Resource Guide for Third Grade MS AAAS for Science

Standard	Performance Objective	
A.L.3.1 Students will identify characteristics of organisms and how they relate to their growth, survival, behavior, and reproduction within an environment.	A.L.3.1.1 Describe physical characteristic of animals (e.g., fur, fins, scales). A.L.3.1.2 Identify the function of body parts (e.g., mouth for eating). A.L.3.1.3 Identify the stages of an animal’s life cycle (e.g., baby, adolescent, adult, death). A.L.3.1.4 Identify characteristics of animals that help them survive in distinct environments (e.g., water, desert, forest, polar). A.L.3.1.5 Identify unique characteristics of organisms that allow survival in their environment (e.g., duck has webbed feet to swim). A.L.3.1.6 Identify structures of plants (e.g., thorns, leaves, stems, roots, colored petals) with their function (e.g., survival growth, reproduction).	
I Can Statements		
MOST COMPLEX ←	→ LEAST COMPLEX	
A.L.3.1.1 (A) Describe physical characteristic of animals (e.g., fur, fins, scales).	A.L.3.1.1 (B) Sort pictures of animals based upon a specific characteristic (e.g., select the animals with fur, select the fish that have scales.)	A.L.3.1.1 (C) Select a picture that portrays a specific physical characteristic (e.g., animal that has fur, fish that has fins).
A.L.3.1.2 (A) Identify the function of body parts (e.g., mouth for eating).	A.L.3.1.2 (B) Match a body part to a specified function (e.g., mouth for eating).	A.L.3.1.2 (C) Select the specific part of the body that is used for a specified function (e.g., mouth for eating).
A.L.3.1.3 (A) Identify the stages of an animal’s life cycle (e.g., baby, adolescent, adult, death).	A.L.3.1.3 (B) Identify two stages of an animals’ life cycle (e.g., baby, adolescent, adult, death).	A.L.3.1.3 (C) Select a picture that portrays a specified stage of an animal’s life cycle (e.g., baby, adolescent, adult, death).
A.L.3.1.4 (A) Identify characteristics of animals that help them survive in distinct environments (e.g., water, desert, forest, polar).	A.L.3.1.4 (B) Identify characteristics of specific animals (e.g., fish lives in water, camel lives in the desert).	A.L.3.1.4 (C) Match an animal to its habitat. (e.g., whale—ocean, fish—water, deer—forest, etc.)
A.L.3.1.5 (A) Identify unique characteristics of organisms that allow survival in their environment (e.g., duck has webbed feet to swim)	A.L.3.1.5 (B) Identify characteristics of specific animals (fish has gills to breathe and lives in water, camel can go long distances without water and lives in the desert).	A.L.3.1.5 (C) Match animals to their unique characteristic (fish has fins, camel has a hump, duck has webbed feet.)
A.L.3.1.6 (A) Identify structures of plants (e.g., thorns, leaves, stems, roots, or colored petals) with their function (e.g., survival, growth, reproduction).	A.L.3.1.6 (B) Identify structures of plants (e.g. petals, roots, stems, leaves, etc.).	A.L.3.1.6 (C) Select a plant structure. (e.g., show me a petal)

GRADE: Third Grade

DOMAIN: Life Science

CONCEPT: Hierarchical Organization

<p>Real-World Connections:</p> <ul style="list-style-type: none">• Have a specialist make a presentation (e.g., animals, plants)• Visit a zoo• Visit someones garden• Plant a seed and watch it grow• Visit a farm and observe diffent kinds of animals in their natural environment	<p>Vocabulary</p> <ul style="list-style-type: none">• Characteristics• Fur• Fins• Scales• Animal• Baby• Adolescent• Adult• Death• Mouth• Nose• Eyes• Roots• Birds• Fish• Classification• Stems• Leaves• Thorn• Petals• Flower• Water• Desert• Forest• Polar• Habitat• Structures• Functions• Mammals• Reptiles• Amphibians
<p>Resources:</p> <ul style="list-style-type: none">• Instructional Material:<ul style="list-style-type: none">○ National Geographic Kids○ Structure and Function: How Organisms Live, Behave, Reproduce, and Grow Lesson, source: What I Have Learned Teaching website○ Introduction to Animal Behavior Lesson, source: Khan Academy website○ ISL Skills Available for Mississippi Grade 3 Science Standards, source: IXL Website• Videos:<ul style="list-style-type: none">○ Kratt Brothers Videos	

GRADE: Third Grade

DOMAIN: Life Science

CONCEPT: Reproduction and Heredity

Standard		Performance Objective
<p>A.L.3.2 Students will demonstrate an understanding that through reproduction, features of plants and animals are inherited from parent organisms but can also be influenced by the environment.</p>		<p>A.L.3.2.1 Match offspring of parent organism(s). A.L.3.2.2 Describe similar traits passed from parent organisms to offspring. A.L.3.2.3 Identify traits that can be influenced by the environment (e.g., arctic fox's coat gets thicker and turns white in winter; cacti have thick waxy covering to seal moisture).</p>
I Can Statements		
MOST COMPLEX ←		→ LEAST COMPLEX
<p>A.L.3.2.1 (A) Match offspring of parent organisms(s).</p>	<p>A.L.3.2.1 (B) Sort pictures as offspring or parents (e.g., puppies, kittens, calves as offspring; dogs, cats, cows as parents).</p>	<p>A.L.3.2.1 (C) Identify a specific animal (e.g., find the puppy, kitten, dog, cat).</p>
<p>A.L.3.2.2 (A) Describe similar traits passed from parent organisms to offspring.</p>	<p>A.L.3.2.2 (B) Match pictures of offspring to possible parents based upon a specific trait. (e.g., select a picture of a child and a parent that have brown hair).</p>	<p>A.L.3.2.2 (C) Identify a trait (e.g., find the person with brown hair).</p>
<p>A.L.3.2.3 (A) Identify traits that can be influenced by the environment (e.g., arctic fox's coat gets thicker and turns white in winter; cacti have thick waxy covering to seal moisture).</p>	<p>A.L.3.2.3 (B) Identify needs of animals in their environment. (e.g., What does an arctic fox need to stay warm in the arctic? What does a fish need to breathe in the water?).</p>	<p>A.L.3.2.3 (C) Identify traits of organisms. (e.g., fox has fur, fish have gills, roses have thorns, chameleons change color.).</p>
<p>Real-World Connections:</p> <ul style="list-style-type: none"> • Visit a zoo or aquarium • Have a specialist make a presentation (e.g., animals, plants) • Visit a farm and observe different kinds of animals in their natural environment • Watch videos of animals in their natural environments 		<p>Vocabulary:</p> <ul style="list-style-type: none"> • Traits • Offspring • Parent • Child • Organism • Environment • Fur • Gills • Tundra • Desert • Jungle • Ocean • Arctic • Forest • Rain forest
<p>Resources:</p> <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ National Geographic Kids ○ Mississippi Extension Service—County Agent 		

GRADE: Third Grade

DOMAIN: Life Science

CONCEPT: Reproduction and Heredity

- [Listing of online Instructional Resources](#), source: Covington Kentucky Independent Schools website
- **Videos:**
 - [Kratt Brothers Videos](#)

GRADE: Third Grade

DOMAIN: Life Science

CONCEPT: Adaptations and Diversity

Standard		Performance Objective	
<p>A.L.3.4 Students will identify how adaptations allow animals to meet their needs.</p>		<p>A.L.3.4.1 Classify organisms to their biome. A.L.3.4.2 Identify changes in a habitat to organisms' responses (e.g., cold or drought means less food, more light) in a habitat and possible responses (e.g., hibernating, migrating, death, growing taller) of the plants and animals.</p>	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
<p>A.L.3.4.1 (A) Classify organisms to their biome.</p>	<p>A.L.3.4.1 (B) Sort a group of pictures into two categories—biome or organism.</p>	<p>A.L.3.4.1 (C) Using a group of pictures, identify each biome.</p>	
<p>A.L.3.4.2 (A) Identify changes in a habitat to organisms' responses (e.g., cold or drought means less food, more light) in a habitat and possible responses (e.g., hibernating, migrating, death, growing taller) of the plants and animals.</p>	<p>A.L.3.4.2 (B) When given a habitat change, use a picture to identify the effect of the change.</p>	<p>A.L.3.4.2 (C) Identify what factor(s) causes a habitat to change.</p>	
<p>Real-World Connections:</p> <ul style="list-style-type: none"> • Organisms are impacted by climate change • How humans are impacted by extreme weather • Impact of wildfires, floods, and other events on habitat • Preparing for environmental changes 		<p>Vocabulary:</p> <ul style="list-style-type: none"> • Biome • Desert • Rainforest • Tundra • Taiga • Grassland • Survival • Migrating • Hibernating • Cactus • Water • Adaptations • Environment • Habitat 	
<p>Resources:</p> <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Adaptations of Animals Lesson Plan, source: Standards Aligned System (SAS) website developed by the Pennsylvania Department of Education ○ Self-Directed Tour Grades Three through Five Animal Adaptations Teacher Guide, source: Zoological Society of Milwaukee website (may need to type in URL) 			

GRADE: Third Grade

DOMAIN: Physical Science

CONCEPT: Organization of Matter and Chemical Interactions

Standard		Performance Objective	
A.P.3.5 Students will apply the physical properties of matter and recognize changes in states between a solid, liquid, or gas.		A.P.3.5.1 Identify an observable property of a matter (e.g., hard/soft, rough/smooth). A.P.3.5.2 Sort objects or substances as being a solid, liquid, or gas. A.P.3.5.3 Identify a change in the form of matter (e.g., solid to liquid, liquid to gas).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.3.5.1 (A) Identify an observable property of a matter (e.g., hard/soft, rough/smooth).	A.P.3.5.1 (B) Sort materials based on a specific property (e.g., hard/soft, wet/dry, etc.).	A.P.3.5.1 (C) Select an item that matches the given prompt.	
A.P.3.5.2 (A) Sort objects or substances as being a solid, liquid, or gas.	A.P.3.5.2 (B) Describe a characteristic of a solid, liquid, or gas.	A.P.3.5.2 (C) Identify if the presented object is a solid, liquid, or gas.	
A.P.3.5.3 (A) Identify a change in the form of matter (e.g., solid to liquid, liquid to gas).	A.P.3.5.3 (B) Contrast the changes between two (2) states of matter (e.g., freezing, melting, condensing, evaporating).	A.P.3.5.3 (C) Identify if the presented object is a solid, liquid, or gas.	
Real-World Connections: <ul style="list-style-type: none"> • Life skills • Job skills • Cooking • Daily living skills • Cleaning • Weather • First aid/health care 		Vocabulary <ul style="list-style-type: none"> • Liquid • Solid • Gas • Evaporating • Freezing • Condensing • Vaporizing • Expanding • Melting • Contracting 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Matter: Definition & the Five States of Matter Article, source: LiveScience.com website ○ States of Matter Activities, source: Radar’s Chem4kids.com website ○ Teacher’s Guide Grade 3 States of Matter, source: EduSmart Science website ○ Curriculum Guide for Solids, Liquids, and Gases (Based on the STC kit Solids and Liquids and Discovery Works Solids, Liquids, and Gases), source: Wallingford Connecticut Public Schools website 			

GRADE: Third Grade

DOMAIN: Physical Science

CONCEPT: Organization of Matter and Chemical Interactions

- **Videos:**

- [Move Like a State of Matter | Science Song for Kids | Solid, Liquid, Gas | Jack Hartmann](#) [YouTube Video]

GRADE: Third Grade
 DOMAIN: Physical Science
 CONCEPT: Organization of Matter and Chemical Interactions

Standard		Performance Objective	
A.P.3.6 Students will demonstrate a basic understanding of magnets.		A.P.3.6.1 Identify items or materials that are not attracted to magnets. A.P.3.6.2 Classify objects that are attracted to magnets. A.P.3.6.3 Identify how magnets are used in everyday life.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.3.6.1 (A) Identify items or materials that are not attracted to magnets.	A.P.3.6.1 (B) Contrast objects that are and are not attracted to magnets.	A.P.3.6.1 (C) Identify a nonmagnet.	
A.P.3.6.2 (A) Classify objects that are attracted to magnets.	A.P.3.6.2 (B) Determine if a given object is attracted to magnet	A.P.3.6.2 (C) Identify a magnet.	
A.P.3.6.3 (A) Identify how magnets are used in everyday life.	A.P.3.6.3 (B) Identify magnets that are used in everyday life to help people.	A.P.3.6.3 (C) Locate magnets that are used in everyday life.	
Real-World Connections: <ul style="list-style-type: none"> • Job skills • Life skills • Daily living skills • Recreation/leisure • Science knowledge • Security (home/business) • Safety • Organization 		Vocabulary: <ul style="list-style-type: none"> • Magnet • Attract • Repel • Non-magnetic 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Magnetism Facts and Information, source: Explainthatstuff.com website ○ Magnetic Assessment Lesson, source: BetterLesson.com website ○ Wonders of Magnets Hands-on, center-based experiments that explore the basics of magnets and magnetism, source: National Energy Education Development (NEED) Project website ○ Forces and Interactions Third Grade Teacher's Guide, source: McCracken County Schools (Paducah, Kentucky) website 			

GRADE: Third Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth's Structure and History

Standard		Performance Objective	
A.E.3.7A Students will identify and classify characteristics of Earth's materials.		<p>A.E.3.7A.1 Use observational data to compare properties (e.g., size, shape, color, rough, smooth, wet, salty) of the Earth's materials (e.g., rocks, soils, sand, water).</p> <p>A.E.3.7A.2 Classify Earth's materials by the way they could be used (e.g., soil and water to grow plants, rocks to build roads).</p>	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.3.7A.1 (A) Use observational data to compare properties (e.g., size, shape, color, rough, smooth, wet, salty) of the Earth's materials (e.g., rocks, soils, sand, water).	A.E.3.7A.1 (B) Sort materials according to observable properties.	A.E.3.7A.1 (C) Identify an observable property of a material.	
A.E.3.7A.2 (A) Classify Earth's materials by the way they could be used (e.g., soil and water to grow plants, rocks to build roads).	A.E.3.7A.2 (B) Match a natural resource to a material.	A.E.3.7A.2 (C) Identify a natural resource.	
<p>Real-World Connections:</p> <ul style="list-style-type: none"> • Create charts • Nature walk • Trip to a green house • Actual sample materials sort 		<p>Vocabulary:</p> <ul style="list-style-type: none"> • Natural resource • Material • Properties • Observation 	
<p>Resources:</p> <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Geology 101 Sedimentary, source: KidsNationalGeographic.com ○ Science Online - Earth Features activities and links, source: Jefferson County Tennessee Schools website ○ Earth Rocks Lesson about the Earth's Composition, source: Teach Engineering STEM Curriculum for K12 website • Videos: <ul style="list-style-type: none"> ○ Science TEKS 3.7D Explore the characteristics of natural resources that make them useful in products and materials, source: www.pinterest.com (login required) 			

GRADE: Third Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth's Structure and History

Standard		Performance Objective
<p>A.E.3.7B Students will demonstrate a basic understanding of the composition of Earth and the processes which change Earth's landforms.</p>		<p>A.E.3.7B.1 Identify oceans, seas, rivers, streams, lakes and ponds, and glaciers as a body of water.</p> <p>A.E.3.7B.2 Identify volcanoes, mountains, valleys, canyons, plains, deserts, hills, and islands as Earth's landforms and match characteristics of each.</p> <p>A.E.3.7B.3 Use models to match a natural event (e.g., fires, landslides, earthquakes, volcanic eruptions, floods) or human activity (e.g., farming, mining, building) to its environmental impact.</p>
I Can Statements		
MOST COMPLEX ←		→ LEAST COMPLEX
<p>A.E.3.7B.1 (A) Identify oceans, seas, rivers, streams, lakes and ponds, and glaciers as a body of water.</p>	<p>A.E.3.7B.1 (B) Identify two common bodies of water.</p>	<p>A.E.3.7B.1 (C) Use maps identify land or bodies of water.</p>
<p>A.E.3.7B.2 (A) Identify volcanoes, mountains, valleys, canyons, plains, deserts, hills, and islands as Earth's landforms and match characteristics of each.</p>	<p>A.E.3.7B.2 (B) Identify three common earth landforms and match characteristics of each.</p>	<p>A.E.3.7B.2 (C) Identify two common earth landforms.</p>
<p>A.E.3.7B.3 (A) Use models to match a natural event (e.g., fires, landslides, earthquakes, volcanic eruptions, floods) or human activity (e.g., farming, mining, building) to its environmental impact.</p>	<p>A.E.3.7B.3 (B) Classify events as natural occurrences or human activity.</p>	<p>A.E.3.7B.3 (C) Identify two natural events (e.g., earthquakes, floods).</p>
<p>Real-World Connections:</p> <ul style="list-style-type: none"> • Video on natural disasters • Build a volcano • Current events 		<p>Vocabulary:</p> <ul style="list-style-type: none"> • Mining • Landforms • Glaciers • Earthquakes • Landslide • Natural event
<p>Resources:</p> <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Volcanoes, source: Kids.Nationalgeographic.com ○ The Forces that Change the Face of the Earth, source: Ohio State University College of Education and Human Ecology Beyond Penguins and Polar Bears website ○ Earth's Structure and Processes Lesson Plan, source: Darlington County South Carolina School District website 		

GRADE: Third Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth's Structure and History

- [A Falconer's Memoir Classroom Activities the Land: Shaping the Earth](#), source: PBS.org website
- [Grade 4 Earth Science the Changing Earth Lesson](#), source: South Coast Science Project and Science Matters website

GRADE: Third Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth's Systems and Cycles

Standard		Performance Objective	
A.E.3.9 Students will demonstrate an understanding of how the Earth's systems (i.e. weather conditions and position of the sun) interact in multiple ways to affect Earth's surface.		A.E.3.9.1 Identify different landforms and surface features that are a result from the location and movement of water on Earth's surface (e.g., ponds, creeks, lakes, rivers, canyons).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.3.9.1 (A) Identify different landforms and surface features that are a result from the location and movement of water on Earth's surface (e.g., ponds, creeks, lakes, rivers, canyons).	A.E.3.9.1 (B) Match two pictures of landforms that were created due to movement of water on the earth's surface (e.g., erosion, glaciers melting).	A.E.3.9.1 (C) Use models to identify two types of landform changes over time (e.g., weathering, erosion).	
Real-World Connections: <ul style="list-style-type: none">• Discussions on the power of water and its impact on Earth• Discussions on Earth's changes over time		Vocabulary: <ul style="list-style-type: none">• Erosion• Weathering• Glacier movement	
Resources: <ul style="list-style-type: none">• Instructional Material:<ul style="list-style-type: none">○ Wacky-weekend Pictures of Natural Landforms, source: www.kids.nationalgeographic.com○ Climate Change Pictures and Information, source: www.kids.nationalgeographic.com○ The Forces that Change the Face of Earth Facts and Information, source: Ohio State University College of Education and Human Ecology Beyond Penguins website○ Earth's Systems Interaction Lesson, source: Accelerate Learning website			

GRADE: Third Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth's Resources

Standard		Performance Objective	
A.E.3.10 Students will identify materials, energy, and fuels that humans use which are derived from natural sources.		A.E.3.10.1 Identify some of Earth's resources that are used in everyday life, such as water, wind, soil, forests, oil, natural gas, and minerals. A.E.3.10.2 Identify ways humans attain, use, and protect Earth resources.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.3.10.1 (A) Identify some of Earth's resources that are used in everyday life, such as water, wind, soil, forests, oil, natural gas, and minerals.	A.E.3.10.1 (B) Sort between man-made materials and natural resources.	A.E.3.10.1 (C) Identify three (3) resources in student's everyday life.	
A.E.3.10.2 (A) Identify ways humans attain, use, and protect Earth resources.	A.E.3.10.2 (B) Sort earth's resources into conserve or recycle (e.g., recycle paper, turn off lights, take short showers).	A.E.3.10.2 (C) Identify three (3) earth's resources in student's everyday life.	
Real-World Connections: <ul style="list-style-type: none"> • Protect resources at school through recycling and conservation • Discussion on resources that can be limited • Discussion on man-made materials that can harm Earth 		Vocabulary: <ul style="list-style-type: none"> • Earth • Recycle • Resources • Conserve 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Green Tips Articles, source: www.kids.nationalgeographic.com ○ Renewable and Nonrenewable Resources Article from Educational Series for Third and Fourth Grade Teachers, source: Standards Aligned System (SAS) website developed by the Pennsylvania Department of Education ○ Teaching About Natural Resources and Energy Sources Lesson, source: Ohio State University College of Education and Human Ecology Beyond Penguins website • Videos: <ul style="list-style-type: none"> ○ Information about Mississippi's Natural Resources, source: www.kids.nationalgeographic.com 			

Teacher Resource Guide for Fourth Grade MS AAAS for Science

GRADE: Fourth Grade
 DOMAIN: Life Science
 CONCEPT: Hierarchical Organization

Standard		Performance Objective	
A.L.4.1 Students will identify the major human body systems.		A.L.4.1.1 Identify the major organs in human body systems. A.L.4.1.2 Communicate how infectious diseases (e.g., cold, flu) affect the body system. A.L.4.1.3 Identify lifestyle activities that influence body systems (e.g., diet, exercise, vaccines, etc.).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.4.1.1 (A) Identify the major organs in human body systems.	A.L.4.1.1 (B) Match the major organs to the human body systems.	A.L.4.1.1 (C) Select a major organ of the human body.	
A.L.4.1.2 (A) Communicate how infectious diseases (e.g., cold, flu) affect the body system.	A.L.4.1.2 (B) Identify infectious diseases (common cold, flu) that affect the body system.	A.L.4.1.2 (C) Name one symptom of an infectious disease.	
A.L.4.1.3 (A) Identify lifestyle activities that influence body systems (e.g., diet, exercise, vaccines, etc.).	A.L.4.1.3 (B) Name two lifestyle activities that influence body systems (e.g., diet, exercise, vaccines, etc.).	A.L.4.1.3 (C) Name a lifestyle activity (e.g., diet, exercise, vaccines, dental hygiene, etc.).	
Real-World Connections: <ul style="list-style-type: none"> • Explore models of organ systems • Compare and contrast different organs • Have guest speakers from the medical profession or a dietician • Practice good hygiene • Eat nutritious foods for improved health • Participate in physical education • Move to learn • Understand when to seek medical help • Understand how to select medications for certain illnesses • Make trips to the doctor or dentist for regular checkups 		Vocabulary <ul style="list-style-type: none"> • Heart • Lungs • Brain • Liver • Intestines • Kidneys • Stomach • Bladder • Infection • Common cold • Germ • Influenza • Diet • Disease • Vaccines • Hygiene 	

GRADE: Fourth Grade

DOMAIN: Life Science

CONCEPT: Hierarchical Organization

Resources

- **Instructional Material:**

- [Kids Health from Nemours Website](#), source: Nemours Reading Bright Start
- [Organs of the Human Body Lesson](#), source: Betterlesson.com website
- [Systems of the Human Body Lesson](#), source: American Association for the Advancement of Science Netlinks website
- [The Body Systems Lesson Plan](#), source: Colorado School of Mines website
- [The Human Body 4th Grade Science Lesson](#), source Study.com website

- **Videos:**

- [Move to Learn Mississippi](#) website

GRADE: Fourth Grade

DOMAIN: Life Science

CONCEPT: Reproduction and Heredity

Standard		Performance Objective	
A.L.4.2 Students will demonstrate a basic understanding of lifecycles, including familiar plants and animals (e.g., reptiles, amphibians, birds).		A.L.4.2.1 Sequence the life cycles of familiar plants and animals.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.4.2.1 (A) Sequence the life cycles of familiar plants and animals.	A.L.4.2.1 (B) Identify characteristics from each stage of the plant life cycle and the animal life cycle.	A.L.4.2.1 (C) Select pictures showing the stages in the life cycle of plants and/or animals.	
Real-World Connections: <ul style="list-style-type: none"> • Observing baby chickens hatch • Observing metamorphosis of caterpillars into butterflies • Plant a seed and observe its growth • Understanding the aging process of plants and animals • Understanding differences in development that occur from birth through adulthood • Coping with changes that occur in puberty 		Vocabulary: <ul style="list-style-type: none"> • Animal • Metamorphosis • Life cycle • Organism • Living • Nonliving • Death • Seed • Seed pod • Seedling • Plant • Fruit • Flower • Germinate • Growth • Infant • Child • Teenager • Adult • Organism • Birth 	
Resources <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Structure and Function: Animals vs. Plants Lesson Plan for 3-5 Grades, source: National Wildlife Federation ○ Animal Life Cycles Facts, source: Kidzone Worksheets for Children website ○ What Are the Life Cycles of Different Animals Lesson, source: Scholastic Canada website ○ Animal Growth and Changes, source Scholastic Canada website ○ Animal Life Cycles Creating a Diagram of an Animal Life Cycle, source: Worchester Polytechnic Institute website 			

GRADE: Fourth Grade
 DOMAIN: Physical Science
 CONCEPT: Motions, Forces, and Energy

Standard		Performance Objective	
A.P.4.6A Students will identify common sources of electric energy and the materials used to transfer electricity.		A.P.4.6A.1 Identify uses of electricity. A.P.4.6A.2 Identify items that transmit electricity (e.g., batteries, power lines, generators).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.4.6A.1 (A) Identify uses of electricity.	A.P.4.6A.1 (B) Describe the effect when electricity is added.	A.P.4.6A.1 (C) Identify items that require electricity.	
A.P.4.6A.2 (A) Identify items that transmit electricity (e.g., batteries, power lines, generators).	A.P.4.6A.2 (B) Match a power source to its user.	A.P.4.6A.2 (C) Identify items that supply power.	
Real-World Connections: <ul style="list-style-type: none"> • Job skills • Leisure/recreation • Daily living skills • Cooking • Hazards/safety 		Vocabulary <ul style="list-style-type: none"> • Electricity • Battery • Power lines • Renewable energy (e.g., solar, wind, water) • Generator • Transmit • Supply • Power source • Electronics 	
Resources <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ STEM and Scopes-Circuits and Electricity Lesson, source: Arlington Texas Classics Academy website ○ Energy Literacy Principle 4 - Teaching About Energy Sources Lesson: source: Climate Literacy and Energy Awareness Network (CLEAN) website ○ Electricity Unit Science and Technology Cycle 3, source: Sir Wilfrid Laurier School District Quebec, Canada website ○ Electrical Energy Examples, source: SoftSchools.com website 			

GRADE: Fourth Grade
 DOMAIN: Physical Science
 CONCEPT: Motions, Forces, and Energy

Standard	Performance Objective
A.P.4.6B Students will identify properties of light as a form of energy.	A.P.4.6B.1 Identify colors in a rainbow or prism reflection. A.P.4.6B.2 Demonstrate an understanding of reflection or absorption (e.g., sunlight shining on a window, sunlight on a wall). A.P.4.6B.3 Describe how light behaves when it strikes transparent, translucent, and opaque materials.

I Can Statements

MOST COMPLEX ←—————→ LEAST COMPLEX		
A.P.4.6B.1 (A) Identify colors in a rainbow or prism reflection.	A.P.4.6B.1 (A) Place the colors of a rainbow in the correct order given the colors (e.g., ROYGBIV).	A.P.4.6B.1 (A) Identify the correct color based on given prompt.
A.P.4.6B.2 (A) Demonstrate an understanding of reflection or absorption (e.g., sunlight shining on a window, sunlight on a wall).	A.P.4.6B.2 (B) Contrast reflection and absorption of light using models.	A.P.4.6B.2 (B) Identify a reflection.
A.P.4.6B.3 (A) Describe how light behaves when it strikes transparent, translucent, and opaque materials.	A.P.4.6B.3 (C) Predict how light will react with different types of materials (e.g., glass, wood, wax paper, frosted glass, construction paper).	A.P.4.6B.3 (C) Identify materials that are absorb light (e.g., construction paper, wood, metal).

<p>Real-World Connections:</p> <ul style="list-style-type: none"> • Job skills • Life skills • Adaptive skills • Problem solving • Leisure/recreation • Energy conservation • Weather • Pre-academic skills 	<p>Vocabulary:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">• Absorbed</td> <td style="width: 50%;">• Rainbow</td> </tr> <tr> <td>• Reflected</td> <td>• Prism</td> </tr> <tr> <td>• Transparent</td> <td>• Color</td> </tr> <tr> <td>• Translucent</td> <td>• Contrast</td> </tr> <tr> <td>• Opaque</td> <td>• Albedo</td> </tr> </table>	• Absorbed	• Rainbow	• Reflected	• Prism	• Transparent	• Color	• Translucent	• Contrast	• Opaque	• Albedo
• Absorbed	• Rainbow										
• Reflected	• Prism										
• Transparent	• Color										
• Translucent	• Contrast										
• Opaque	• Albedo										

<p>Resources:</p> <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Properties of Light and Electricity Lesson, source: South Carolina Department of Education website ○ The Energy of Light Lesson, source: Teach Engineering STEM Curriculum for K12 website ○ Light Energy Facts, source: SoftSchools.com website ○ Curriculum Guide for Light Energy, source: Wallingford Connecticut Public Schools website
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GRADE: Fourth Grade

DOMAIN: Physical Science

CONCEPT: Motions, Forces, and Energy

- [Light PPT presentation](#), source: Williston South Carolina School District website

GRADE: Fourth Grade
 DOMAIN: Physical Science
 CONCEPT: Motions, Forces, and Energy

Standard		Performance Objective	
A.P.4.6C Students will identify the properties of sound as a form of energy.		A.P.4.6C.1 Use models to identify the pitch (high/low) and volume (loud/soft) of a sound. A.P.4.6C.2 Identify ways to change the pitch and volume of a sound.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.4.6C.1 (A) Use models to identify the pitch (high/low) and volume (loud/soft) of a sound.	A.P.4.6C.1 (B) Identify a difference between pitch and volume.	A.P.4.6C.1 (C) Identify a difference in volume in sound.	
A.P.4.6C.2 (A) Identify ways to change the pitch and volume of a sound.	A.P.4.6C.2 (B) Identify everyday sources of pitch and/or volume changes (e.g., musical instruments, appliances, sirens).	A.P.4.6C.2 (C) Select ways to adjust volume in everyday objects (e.g., car radio, computer, cell phone).	
Real-World Connections: <ul style="list-style-type: none"> • Job skills • Life skills • Hearing safety • Adaptive skills • Communication skills • Leisure/recreation 		Vocabulary: <ul style="list-style-type: none"> • Volume • Pitch • High • Low • Loud • Soft • Musical instrument • Appliance • Computer • Sound 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Grade 4 Sound Unit, source: Tools for Ambitious Science Teaching website ○ The Phenomenon of Sound: Waves Lesson, source: DiscoveryEducation.com website ○ Properties of Sound Waves Lesson, source: American Association for the Advancement of Science Netlinks website 			

GRADE: Fourth Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth's Systems and Cycles

Standard		Performance Objective	
A.E.4.9A Students will identify the water cycle is propelled by the sun's energy.		A.E.4.9A.1 Identify parts of the water cycle.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.4.9A.1 (A) Identify parts of the water cycle.	A.E.4.9A.1 (B) Use illustrations to describe the processes of the water cycle.	A.P.4.9A.1 (C) Use pictures to identify condensation, evaporation, and precipitation.	
Real-World Connections: <ul style="list-style-type: none"> Fishing trip Rain storm experiments (evaporation) Cloud observations, drawings, models 		Vocabulary: <ul style="list-style-type: none"> Condensation Evaporation Precipitation Water cycle 	
Resources: <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> STEM and Scopes – The Sun and Water Cycle Lesson, source: Arlington Texas Classics Academy website Role of Sunlight and Gravity in the Water Cycle Science Games, source: Legends of Learning website The Water Cycle Reading Materials, source: Edhelper.com website Climate and Earth's Energy Balance Part A: Solar Energy and the Water Cycle, source: The Science Education Resource Center at Carleton College Earth Labs website The Sun and the Water Cycle Lesson, source: PBS Learning Media website The Sun and the Water Cycle Facts, source: U.S. Geological Survey Water Cycle for Kids website 			

GRADE: Fourth Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth's Systems and Cycles

Standard		Performance Objective	
A.E.4.9B Students will identify weather phenomenon and climate patterns.		A.E.4.9B.1 Match severe weather conditions (e.g., thunderstorms, hurricanes, floods, tornadoes) to safety precautions. A.E.4.9B.2 Identify commonly used weather measurement instruments (e.g., barometer, rain gauge, anemometer, wind vane).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.4.9B.1 (A) Match severe weather conditions (e.g., thunderstorms, hurricanes, floods, tornadoes) to safety precautions.	A.E.4.9B.1 (B) Identify safety precautions to take during severe weather conditions.	A.E.4.9B.1 (C) When given a picture, identify what is and is not severe weather conditions.	
A.E.4.9B.2 (A) Identify commonly used weather measurement instruments (e.g., barometer, rain gauge, anemometer, wind vane).	A.E.4.9B.2 (B) Identify a weather tool when given its measures.	A.E.4.9B.2 (C) Match weather tools to weather conditions it measures.	
Real-World Connections: <ul style="list-style-type: none"> • Personal experiences • Weather channel • News • Videos 		Vocabulary: <ul style="list-style-type: none"> • Phenomenon • Measure • Climate • Pattern • Safety • Precaution 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ USGS: The Water Cycle for Schools: Beginner ages Interactive website, source: U.S. Geological Survey ○ The Sun and The Water Cycle, source: Mississippi Public Broadcasting ○ Weather 1: Weather Patterns Lesson, source: American Association for the Advancement of Science Netlinks website ○ Climate Lesson, source: Weather Wizkids website ○ Water Cycle the Earth's Gift 4th Grade Weather Lesson Plan and Activities, source: Math/Science Nucleus website 			

GRADE: Fourth Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth's Systems and Cycles

Standard		Performance Objective
A.E.4.9C Students will identify how natural processes and human activities affect the features of Earth's landforms and oceans.		A.E.4.9C.1 Match natural processes (e.g., weathering, erosion, deposition, earthquakes tsunamis, hurricanes, storms) to the possible impact on Earth's surface. A.E.4.9C.2 Demonstrate an understanding that human activities (e.g., conservation, pollution) affect the Earth.
I Can Statements		
MOST COMPLEX ←		→ LEAST COMPLEX
A.E.4.9C.1 (A) Match natural processes (e.g., weathering, erosion, deposition, earthquakes tsunamis, hurricanes, storms) to the possible impact on Earth's surface.	A.E.4.9C.1 (B) Use models to match a natural event or human activity to its environmental impact.	A.E.4.9C.1 (C) Use pictures to identify a natural event. (e.g., earthquake, volcano) or human activity (e.g., farming, gardening).
A.E.4.9C.2 (A) Demonstrate an understanding that human activities (e.g., conservation, pollution) affect the Earth.	A.E.4.9C.2 (B) Sort activities based on their impact on Earth (e.g., good—conservation vs. bad—pollution).	A.E.4.9C.2 (C) Identify human activities that help and harm Earth.
Real-World Connections: <ul style="list-style-type: none"> • Nature walks • Project (e.g., erosion, weathering) • Compare and contrast rock textures 		Vocabulary: <ul style="list-style-type: none"> • Natural event (e.g., landslides, volcanic eruptions, floods, earthquakes) • Human activity (e.g., mining, building, farming, gardening) • Conservation • Pollution • Impact • Texture
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Identifying weather phenomenon and climate patterns, source: Mississippi Public Broadcasting ○ Standard 7: the physical processes that shape the patterns of Earth's surface, source: National Geographic Society ○ Landforms and Oceans Lesson, source, University of South Carolina Aiken Ruth Patrick Science Education Center website ○ Hands-on Activity: Erosion in Rivers, source: Teach Engineering STEM Curriculum for K12 website ○ South Carolina Academic Standards and Performance Indicators for Science Instructional Unit Resource for 5th Grade, source: South Carolina Department of Education website 		

GRADE: Fourth Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth's Resources

Standard		Performance Objective
A.E.4.10 Students will identify various sources of energy used by humans.		A.E.4.10.1 Identify various forms of energy (e.g., wind, solar, water).
I Can Statements		
MOST COMPLEX ←		→ LEAST COMPLEX
A.E.4.10.1 (A) Identify various forms of energy (e.g., wind, solar, water).	A.E.4.10.1 (B) Match the sources of heat, solar, wind and water.	A.E.4.10.1 (C) Sort a type of energy (e.g., heat, solar, wind, water) with its source (e.g., fire, sun, windmill, dam).
Real-World Connections: <ul style="list-style-type: none"> • Examples of solar power • Project (windmill) • Sun observation • Field trips 		Vocabulary: <ul style="list-style-type: none"> • Solar • Energy • Windmill • Dam
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Lesson: What Is Energy?, source: Teach Engineering STEM Curricula for K12 ○ Nonrenewable Energy Facts and Information, source: National Geographic website ○ Energy Literacy Principle 4 - Teaching About Energy Sources Lesson: source: Climate Literacy and Energy Awareness Network (CLEAN) website ○ How We Use Energy Lesson, source: National Academies of Science Engineering and Medicine website ○ How We Use Energy, source: FutureSparks.org website • Videos: <ul style="list-style-type: none"> ○ Science Video for Kids: What Is Energy? [YouTube video] ○ Different Sources of Energy, Using Energy Responsibly, Educational Video for Kids [YouTube video] 		

Teacher Resource Guide for Fifth Grade MS AAAS for Science

GRADE: Fifth Grade

DOMAIN: Life Science

CONCEPT: Ecology of Interdependence

Standard		Performance Objective	
A.L.5.3A Identify that the sun is the source of energy in the photosynthesis process.		A.L.5.3A.1 Identify the structures of a plant (e.g., roots, stems, leaves) that transport food and water. A.L.5.3A.2 Match structures of a plant and their functions (e.g., leaves make food, stems provide support). A.L.5.3A.3 Demonstrate an understanding that light and water are necessary for green plants' survival to make food (photosynthesis). A.L.5.3A.4 Use observational data and models to recognize that plants grow toward light, roots grow down, and stems grow up.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.5.3A.1 (A) Identify the structures of a plant (e.g., roots, stems, leaves) that transport food and water.	A.L.5.3A.1 (B) Recognize that resources move through the body of a plant.	A.L.5.3A.1 (C) Identify the parts of a plant.	
A.L.5.3A.2 (A) Match structures of a plant and their functions (e.g., leaves make food, stems provide support).	A.L.5.3A.2 (B) Identify the functions of the parts of a plant.	A.L.5.3A.2 (C) Construct a model of a plant.	
A.L.5.3A.3 (A) Demonstrate an understanding that light and water are necessary for green plants' survival to make food (i.e., photosynthesis).	A.L.5.3A.3 (B) Construct a model of the basic process of photosynthesis (e.g., light, water, air are necessary for a plant's growth).	A.L.5.3A.3 (C) Select essential elements of photosynthesis (e.g., air, water) from a list or group of pictures of possible resources.	
A.L.5.3A.4 (A) Use observational data and models to recognize that plants grow toward light, roots grow down, and stems grow up.	A.L.5.3A.4 (B) Sort which parts of plants grow toward gravity and toward light.	A.L.5.3A.4 (C) Use pictures to show that plants grow towards light.	
Real-World Connections: <ul style="list-style-type: none"> • Germinate seeds • Water plants to watch them grow 		Vocabulary <ul style="list-style-type: none"> • Stem • Root • Leaves • Flower • Fruit • Seed • Photosynthesis • Gravity • Growth • Function • Survival • Soil • Transport • Structure 	

GRADE: Fifth Grade

DOMAIN: Life Science

CONCEPT: Ecology of Interdependence

Resources:

• **Instructional Material:**

- [Solar Energy Lesson Plans](#), source: EFMR Monitoring Group website
- [The Sun: Earth's Primary Energy Source Lesson](#), source: Ohio State University College of Education and Human Ecology Beyond Weather website
- [Photosynthesis – Life's Primary Energy Source Lesson](#), source: Teaching Engineering STEM Curriculum for K12 website
- [How Do Plants Get Energy? Students investigate the process of photosynthesis](#), source: PBS Learning Media website

GRADE: Fifth Grade

DOMAIN: Life Science

CONCEPT: Ecology of Interdependence

Standard	Performance Objective
<p>A.L.5.3B Students will list the roles of living things within a food chain.</p>	<p>A.L.5.3B.1 Identify living factors in an ecosystem. A.L.5.3B.2 Classify organisms as producers or consumers. A.L.5.3B.3 Use models to organize a simple food chain. A.L.5.3B.4 Sort the roles of organisms in a food chain (e.g., producer, predator, prey)</p>

I Can Statements

MOST COMPLEX ←—————→ LEAST COMPLEX		
<p>A.L.5.3B.1 (A) Identify living factors in an ecosystem.</p>	<p>A.L.5.3B.1 (B) Compare terrestrial and aquatic ecosystems.</p>	<p>A.L.5.3B.1 (C) Define ecosystem.</p>
<p>A.L.5.3B.2 (A) Classify organisms as producers or consumers.</p>	<p>A.L.5.3B.2 (B) Compare producers and consumers.</p>	<p>A.L.5.3B.2 (C) Define producers and consumers.</p>
<p>A.L.5.3B.3 (A) Use models to organize a simple food chain.</p>	<p>A.L.5.3B.3 (B) Use pictures to identify an organism’s placement in a simple food chain.</p>	<p>A.L.5.3B.3 (C) Use pictures to identify a simple food chain.</p>
<p>A.L.5.3B.4 (A) Sort the roles of organisms in a food chain (e.g., producer, predator, prey)</p>	<p>A.L.5.3B.4 (B) Compare producers, predators, and prey.</p>	<p>A.L.5.3B.4 (C) Define producers, predators, and prey.</p>

<p>Real-World Connections:</p> <ul style="list-style-type: none"> • Understand human beings’ place and role in the food chain • Understand the connection between living things • Explores how all organisms are linked • Changes to one part of the food change affects other parts of the food chain 	<p>Vocabulary:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <ul style="list-style-type: none"> • Ecosystem • Producer • Consumer • Predator • Prey </td> <td style="width: 50%; border: none;"> <ul style="list-style-type: none"> • Living • Nonliving • Food chain • Aquatic • Terrestrial </td> </tr> </table>	<ul style="list-style-type: none"> • Ecosystem • Producer • Consumer • Predator • Prey 	<ul style="list-style-type: none"> • Living • Nonliving • Food chain • Aquatic • Terrestrial
<ul style="list-style-type: none"> • Ecosystem • Producer • Consumer • Predator • Prey 	<ul style="list-style-type: none"> • Living • Nonliving • Food chain • Aquatic • Terrestrial 		

<p>Resources:</p> <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Food Chains and Webs Lesson Plan, source: Michigan State University Sea Grant website ○ Ecosystem Food Chain and Food Web, source: Ducksters Education website ○ Matter and Energy in Organisms and Ecosystems 5th Grade Lesson, source: Lewis County School Vanceburg, Kentucky website • Videos: <ul style="list-style-type: none"> ○ Food Chains and the Circle of Life [YouTube Video]

GRADE: Fifth Grade

DOMAIN: Physical Science

CONCEPT: Organization of Matter and Chemical Interactions

Standard		Performance Objective	
A.P.5.5A Students will identify the physical properties of matter.		A.P.5.5A.1 Describe physical properties of solids, liquids, and gases. A.P.5.5A.2 Using an appropriate tool, identify the mass of items. A.P.5.5A.3 Classify items, objects, or substances by density. A.P.5.5A.4 Make predictions about how the density of an object affects whether the object sinks or floats when placed in a liquid.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.5.5A.1 (A) Describe physical properties of solids, liquids, and gases.	A.P.5.5A.1 (B) Identify a property of a solid, liquid, or a gas.	A.P.5.5A.1 (C) Select a solid, liquid, or gas.	
A.P.5.5A.2 (A) Using an appropriate tool, identify the mass of items.	A.P.5.5A.2 (B) Compare the mass of two (2) items.	A.P.5.5A.2 (C) Select the appropriate tool to identify the mass of an item.	
A.P.5.5A.3 (A) Classify items, objects, or substances by density.	A.P.5.5A.3 (B) Compare the density of two (2) or more items.	A.P.5.5A.3 (C) Select an item or object that is the heaviest (most dense).	
A.P.5.5A.4 (A) Make predictions about how the density of an object affects whether the object sinks or floats when placed in a liquid.	A.P.5.5A.4 (B) Gather data on at least three (3) objects whether they sink or float.	A.P.5.5A.4 (C) State whether an object sinks or floats.	
Real-World Connections: <ul style="list-style-type: none"> • Cooking • Life skills • Leisure/recreation • Problem solving • Job skills • Communication 		Vocabulary: <ul style="list-style-type: none"> • Sink • Float • Density • Mass • Solid • Liquid • Gas • Property • Tool • Compare 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Structure and Properties of Matters 5th Grade Unit Teacher Manual, source: McCracken County Schools Paducah, Kentucky website ○ Physical Properties of Matter Lesson, source: Center for Educational Outreach Super STAAR (Science Teaching and Assessment Resources) from Baylor College of Medicine ○ 1.5 Physical Properties of Matter Lesson, source: CK12.org website ○ Structure and Properties of Matter Lesson, source National Science Teachers Association (NSTA) website 			

GRADE: Fifth Grade

DOMAIN: Physical Science

CONCEPT: Organization of Matter and Chemical Interactions

Standard		Performance Objective	
<p>A.P.5.5B Students will identify mixtures and solutions along with methods for separation of mixtures and solutions common to life application.</p>		<p>A.P.5.5B.1 Identify a mixture as two or more substances that are mixed together.</p> <p>A.P.5.5B.2 Identify mixtures in which the individual materials substances can easily be separated (e.g., salad; sand and water).</p> <p>A.P.5.5B.3 Identify systems (e.g., sifting, filtration, evaporation, magnetic attraction, floatation) for separating various mixtures.</p>	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
<p>A.P.5.5B.1 (A) identify a mixture as two or more substances that are mixed together.</p>	<p>A.P.5.5B.1 (B) Select two (2) ingredients that can be mixed together.</p>	<p>A.P.5.5B.1 (C) Identify common household mixtures. (e.g., Kool-Aid, Salad dressing.)</p>	
<p>A.P.5.5B.2 (A) Identify mixtures in which the individual materials substances an easily be separated (e.g., salad; sand and water).</p>	<p>A.P.5.5B.2 (B) Separate the like parts of a mixture.</p>	<p>A.P.5.5B.2 (C) Using pictures or a model select an example of a mixture.</p>	
<p>A.P.5.5B.3 (A) Identify systems (e.g., sifting, filtration, evaporation, magnetic attraction, floatation) for separating various mixtures.</p>	<p>A.P.5.5B.3 (B) Use an appropriate tool to separate a mixture.</p>	<p>A.P.5.5B.3 (C) Select the appropriate tool to separate a mixture.</p>	
<p>Real-World Connections:</p> <ul style="list-style-type: none"> • Cooking • Lab • Life skills • Job skills • Problem solving • Leisure/recreation 		<p>Vocabulary</p> <ul style="list-style-type: none"> • Tool • Mixture • Ingredient • Substance • Separation • Evaporation • Sifting • Magnetic attraction • Floatation • Filtration 	
<p>Resources:</p> <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Conduct a demonstration or a lab to create mixtures ○ Separating Mixtures Lesson, source: Wiley.com Australia website ○ Properties of Mixtures vs. Solutions: Mix It Up! Lesson, source: Teaching Engineering STEM Curriculum for K-12 website ○ Solutions and Mixtures Lesson, source: Radar's Chem4kids.com website 			

GRADE: Fifth Grade

DOMAIN: Physical Science

CONCEPT: Organization of Matter and Chemical Interactions

- [How to teach mixtures and solutions](#), source: Education in Chemistry — Royal Society in Chemistry website
- [Chemistry for Kids Chemical Mixtures Lesson](#), source: Ducksters Education website

GRADE: Fifth Grade
 DOMAIN: Physical Science
 CONCEPT: Organization of Matter and Chemical Interactions

Standard		Performance Objective	
A.P.5.5C Students will identify physical and chemical changes.		A.P.5.5C.1 Identify a physical change (e.g., ice melting, paper torn into smaller pieces). A.P.5.5C.2 Identify a chemical change (e.g., burning wood, a candle, rusting of iron, souring of milk).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.5.5C.1 (A) Identify a physical change (e.g., ice melting, paper torn into smaller pieces).	A.P.5.5C.1 (B) Describe the physical change that occurred to an object (e.g., add heat, break, tear, freeze).	A.P.5.5C.1 (C) Select an object that has gone through a physical change.	
A.P.5.5C.2 (A) Identify a chemical change (e.g., burning wood or a candle, rusting of iron, souring of milk)	A.P.5.5C.2 (B) Describe the chemical change that occurred to an object (e.g., add heat, burn, combined, freeze).	A.P.5.5C.2 (C) Select an object that has gone through a chemical change.	
Real-World Connections: <ul style="list-style-type: none"> • Cooking • Life skills • Job skills • Food safety • Leisure/recreation • Safety • Cleaning 		Vocabulary: <ul style="list-style-type: none"> • Chemical Change • Physical Change • Break • Tear • Heat • Rust • Souring • Combine/mixture • Burn 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ All About Matter: Chemical vs. Physical Changes Lesson, source: education.com website ○ Chemical and Physical Changes Stations Lesson, source: College of Agriculture and Environmental Science University of Georgia website ○ 5 Hands-On Experiments to Teach Kids About Chemical Reactions, source: Owlcation STEM website 			

GRADE: Fifth Grade

DOMAIN: Physical Science

CONCEPT: Motions, Forces, and Energy

Standard		Performance Objective	
<p>A.P.5.6 Students will identify factors that affect the motion of an object.</p>		<p>A.P.5.6.1 Use models to identify the speed (fast or slow) or direction (up or down) of a moving object.</p> <p>A.P.5.6.2 Identify forces that can make objects move faster, slower, stop, or change directions.</p> <p>A.P.5.6.3 Demonstrate an understanding that unbalanced forces change the rate and direction of motion of an object.</p> <p>A.P.5.6.4 Identify that when the same force (push or pull) is applied to two different objects, the mass (heavy or light) of the objects will affect their motion (e.g., when the same push is applied to a heavier book and to a lighter book the heavy book will move less).</p> <p>A.P.5.6.5 Use models to demonstrate that friction is a force that acts against motion.</p>	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
<p>A.P.5.6.1 (A) Use models to identify the speed (fast or slow) or direction (up or down) of a moving object.</p>	<p>A.P.5.6.1 (B) Sort items that can move. (e.g., mountain vs. car)</p>	<p>A.P.5.6.1 (C) Using video or pictures, select the item that is moving.</p>	
<p>A.P.5.6.2 (A) Identify forces that can make objects move faster, slower, stop, or change directions.</p>	<p>A.P.5.6.2 (B) Match objects with the force that causes a change in motion.</p>	<p>A.P.5.6.2 (C) Identify a force that can cause a change in motion (e.g., wind, push, pull, magnet, motor).</p>	
<p>A.P.5.6.3 (A) Demonstrate an understanding that unbalanced forces change the rate and direction of motion of an object.</p>	<p>A.P.5.6.3 (B) Compare the effect of the unbalanced forces on the rate and direction of motion of an object (e.g., seesaw).</p>	<p>A.P.5.6.3 (C) Select two (2) objects that are unbalanced.</p>	
<p>A.P.5.6.4 (A) Identify that when the same force (push or pull) is applied to two different objects, the mass (heavy or light) of the objects will affect their motion (e.g., when the same push is applied to a heavier book and to a lighter book the heavy book will move less).</p>	<p>A.P.5.6.4 (B) Determine the effect of a balanced force vs. an unbalanced force (i.e., which object is heavier or lighter)</p>	<p>A.P.5.6.4 (C) Select two (2) objects that are balanced.</p>	
<p>A.P.5.6.5 (A) Use models to demonstrate that friction is a force that acts against motion.</p>	<p>A.P.5.6.5 (B) Compare the effect of friction on different textures. (e.g., carpet vs. tile)</p>	<p>A.P.5.6.5 (C) Define friction as a force that acts against motion.</p>	

GRADE: Fifth Grade

DOMAIN: Physical Science

CONCEPT: Motions, Forces, and Energy

Real-World Connections:

- Life skills
- Job skills
- Leisure/recreation/sports
- Cooking

Vocabulary:

- Motion
- Friction
- Texture
- Balanced
- Unbalanced
- Speed
- Direction
- Rate

Resources:

• **Instructional Material:**

- [Factors that Affect Motion PowerPoint Slide Show](#), source: Richfield Illinois School District website
- [How Does Force Affect Motion? Lesson](#), source: CPALS.org website
- [Laws of Motion Lesson](#), source: Ducksters Education website

GRADE: Fifth Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth and the Universe

Standard		Performance Objective	
A.E.5.8A Students will identify locations and positions of objects in the universe.		A.E.5.8A.1 Identify objects in our solar system (sun, planets, moon, and comets). A.E.5.8A.2 Use models to place the positions/locations of the sun, moon, and Earth in our solar system. A.E.5.8A.3 Identify tools that are used to study space (e.g. telescope and satellite).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.5.8A.1 (A) Identify objects in our solar system (sun, planets, moon, and comets).	A.E.5.8A.1 (B) Label objects in our solar system (e.g., sun, planets, moon, comets).	A.E.5.8A.1 (C) Sort objects that belong in our solar system (e.g., sun, planets, moon, comets).	
A.E.5.8A.2 (A) Use models to place the positions/locations of the sun, moon, and Earth in our solar system.	A.E.5.8A.2 (B) Given objects in our solar system put them in the correct order of their location and position.	A.E.5.8A.2 (C) Given a completed solar system picture match the sun, moon, and Earth to its location.	
A.E.5.8A.3 (A) Identify tools that are used to study space (e.g., telescope and satellite).	A.E.5.8A.3 (B) Label the objects (e.g., telescope and satellite) used to study space.	A.E.5.8A.3 (C) Given pictures of tools used to study space (e.g., telescope and satellite), match the picture to the object.	
Real-World Connections: <ul style="list-style-type: none"> Observe night sky; draw a picture of what you see Watch <i>Apollo 13</i> Compare and contrast our solar system to what you see in <i>Star Wars</i> movies 		Vocabulary: <ul style="list-style-type: none"> Sun Earth Moon Rotation Comets Moon phases (i.e., first, third quarter, full, new) 	
Resources: <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> Solar System model modules about space-related topics, games, videos, and crafts, source: Space Place NASA website Order Of the Planets From The Sun Lesson, source: Universe Today Space and Astronomy News website Solar Systems Lesson Plans and Thematic Units, source: The Teachers Guide website Solar System lesson plans, interactive activities, and other resources to help students learn about and explore our solar system, source: Scholastic Inc. website Videos: <ul style="list-style-type: none"> Exploring Our Solar System: Planets and Space for Kids – FreeSchool [YouTube Video] How to make a 3D Solar System for Kids Bing search 			

GRADE: Fifth Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth and the Universe

Standard		Performance Objective	
A.E.5.8B Students will identify moon phases, day and night, appearance of objects in the sky, and seasonal changes.		A.E.5.8B.1 Match the Earth’s seasons to temperature changes. A.E.5.8B.2 Identify changes in the appearance of the moon as it revolves around the Earth.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.5.8B.1 (A) Match the Earth’s seasons to temperature changes.	A.E.5.8B.1 (B) Use pictures to identify ways humans are affected by changes in a season.	A.E.5.8B.1 (C) Use pictures to identify changes in a season (e.g., trees lose leaves).	
A.E.5.8B.2 (A) Identify changes in the appearance of the moon as it revolves around the Earth.	A.E.5.8B.2 (B) Recognize that the moon revolves around Earth.	A.E.5.8B.2 (C) Model objects revolving.	
Real-World Connections: <ul style="list-style-type: none"> • Video on seasons • Video on moon phases • Draw pictures of moon • Daily moon log 		Vocabulary: <ul style="list-style-type: none"> • Fall • Spring • Summer • Winter • Revolving 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Observing the Moon Activity, source: NASA Jet Propulsion Laboratory California Institute of Technology Education website ○ Sky 1: Objects in the Sky Lesson, source: American Association for the Advancement of Science Netlinks website ○ Day/Night & Moon Phases Build A Unit! Unit Planning Pack with Resources, source: Lincoln County Schools (Lincolnton, NC) website ○ Lunar Learning: Moon Phases Always on the Move Lesson, source: Teach Engineering STEM Curriculum for K12 website ○ Tides, Moon Phases, & Seasons Pattern of Changes Lesson, source: Smore.com website • Videos: <ul style="list-style-type: none"> ○ Videos Moon phases – Crash Course in Astronomy, source: PBS Learning Media ○ Video Phases of the Moon Astronomy and Space for Kids – FreeSchool [YouTube video] 			

GRADE: Fifth Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth's Resources

Standard		Performance Objective	
A.E.5.10 Students will identify the effects of human interaction with Earth and how Earth's natural resources can be protected and conserved.		A.E.5.10.1 Classify recyclable materials (e.g., plastic, paper, aluminum). A.E.5.10.2 Identify ways that individuals and communities can prepare for geographically-specific natural disasters.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.5.10.1 (A) Classify recyclable materials (e.g., plastic, paper, aluminum).	A.E.5.10.1 (B) Sort items as trash and recyclable (e.g., plastic, paper, aluminum).	A.E.5.10.1 (C) Identify an object as recyclable.	
A.E.5.10.2 (A) Identify ways that individuals and communities can prepare for geographically-specific natural disasters.	A.E.5.10.2 (B) Given a natural disaster, match it to its safety precaution.	A.E.5.10.2 (C) Select a picture of a natural disaster.	
Real-World Connections: <ul style="list-style-type: none"> Severe weather videos Personal natural disaster stories School/classroom recycle project 		Vocabulary: <ul style="list-style-type: none"> Safety Precaution Flood Tornado Hurricane Disaster Recyclable (e.g., plastic, paper, aluminum). Natural 	
Resources: <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> Protecting Our Planet Lesson, source: DiscoveryEducation.com website Earth's Natural Resources and Human Impacts PowerPoint Presentation, source: U.S. Geological Survey Water Cycle for Kids website Freshwater Systems Lesson, source: World Wildlife Fund website The Human Footprint Lesson, source: World Wildlife Fund website 21 Ideas Big and Small to Bring Recycling Into the Classroom, source: WeAreTeachers.com website Reduce, Reuse, Recycle Resources for Students and Educators, source: Environmental Protection Agency website Lessons Plans on Recycling, source: The Recycle Guys website 			

Teacher Resource Guide for Sixth Grade MS AAAS for Science

Standard		Performance Objective	
A.L.6.1 Students will demonstrate an understanding that living things range from simple to complex organisms and are organized hierarchically.		A.L.6.1.1 Identify living and nonliving things. A.L.6.1.2 Match pictures, drawings, or models of cells as belonging to a plant or an animal. A.L.6.1.3 Classify organisms as unicellular or multicellular. A.L.6.1.4 Identify parts of a plant cell (e.g., nucleus, cell membrane, cell wall, vacuoles) and animal cell. A.L.6.1.5 Arrange cells, tissues, organs, and systems in order from least to most complex.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.6.1.1 (A) Identify living and nonliving things.	A.L.6.1.1 (B) Match living things and nonliving things.	A.L.6.1.1 (C) Select a living thing.	
A.L.6.1.2 (A) Match pictures, drawings, or models of cells as belonging to a plant or an animal.	A.L.6.1.2 (B) Identify a picture, drawing, or model of a cell that belongs to an animal and one of a cell that belongs to a plant.	A.L.6.1.2 (C) Select a picture, drawing, or model of a cell.	
A.L.6.1.3 (A) Classify organisms as unicellular or multicellular.	A.L.6.1.3 (B) Select a unicellular organism and a multicellular organism.	A.L.6.1.3 (C) Select a multicellular organism.	
A.L.6.1.4 (A) Identify parts of a plant cell (e.g., nucleus, cell membrane, cell wall, vacuoles) and animal cell.	A.L.6.1.4 (B) Match parts of a plant cell (e.g., nucleus, cell membrane, cell wall, vacuoles) and animal cell.	A.L.6.1.4 (C) Choose a plant cell or an animal cell.	
A.L.6.1.5 (A) Arrange cells, tissues, organs, and systems in order from least to most complex.	A.L.6.1.5 (B) Select illustrations of cells, tissues, organs, and systems.	A.L.6.1.5 (C) Use pictures to identify a cell, a tissue, an organ, and a system.	
Real-World Connections: <ul style="list-style-type: none"> Observe cells under a microscope Understand how one's health is affected by unicellular organisms (e.g., bacteria, germs) 		Vocabulary <ul style="list-style-type: none"> Cell Germs Bacteria Living Nonliving Animal cell Plant cell Unicellular Multicellular Nucleus Cell membrane Cell wall Vacuoles Tissue Organ Systems Organization 	

GRADE: Sixth Grade

DOMAIN: Life Science

CONCEPT: Hierarchical Organization

Resources

- **Instructional Material:**

- [Plant Cells vs. Animal Cells, With Diagrams Lesson](#), source: Owlcation STEM website
- [A Brief Introduction to the Levels of Organization of Living Things](#), source: BiologyWise website
- [A Science Mini-Unit: Living and Non-Living](#), source: Kindergartenkindergarten.com
- [Living/Nonliving Lesson](#), source: Science4us.com website
- [Living vs. Nonliving Unit](#), source: Science A-Z website
- [Looking for Living and Nonliving Things Lesson](#), source: SERC The Science Education Resource Center at Carleton College
- [Tissues, Organs, & Organ Systems Lesson](#), source: Khan Academy website
- [Organization of the Human Body Biology Lesson - How is the human body similar to a well-tuned machine?](#), source: CK12.org website

GRADE: Sixth Grade

DOMAIN: Life Science

CONCEPT: Ecology and Interdependence

Standard		Performance Objective	
A.L.6.3 Students will Identify the relationships between survival of organisms and environmental changes.		A.L.6.3.1 Identify environmental factors that living organisms depend upon to survive. A.L.6.3.2 Identify levels of organization within ecosystems (species, populations, ecosystems, and biomes). A.L.6.3.3 Classify consumers as carnivores, herbivores and omnivores. A.L.6.3.4 Indicate whether an environmental factor will impact an organism’s survival in an ecosystem.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.6.3.1 (A) Identify environmental factors that living organisms depend upon to survive.	A.L.6.3.1 (B) Define environmental factors required for organisms to survive.	A.L.6.3.1 (C) Identify environmental factors.	
A.L.6.3.2 (A) Identify levels of organization within ecosystems (species, populations, ecosystems, and biomes).	A.L.6.3.2 (B) Define levels of organization within an ecosystem.	A.L.6.3.2 (C) Use pictures to identify an ecosystem.	
A.L.6.3.3 (A) Classify consumers as carnivores, herbivores and omnivores.	A.L.6.3.3 (B) Define carnivores, herbivores, and omnivores.	A.L.6.3.3 (C) Identify carnivores, herbivores, and omnivores.	
A.L.6.3.4 (A) Indicate whether an environmental factor will impact an organism’s survival in an ecosystem.	A.L.6.3.4 (B) Determine the impact of an environmental factor on an organism’s survival.	A.L.6.3.4 (C) Identify environmental factors (e.g., drought, fire, flood, climate change, hurricane, tornado).	
Real-World Connections: <ul style="list-style-type: none"> • Environmental factors can lead to competition for food, water, space, and shelter • What it means to be an omnivore • Basic needs of humans, including nutrition and health • Hazards associated with extreme weather conditions • Build a food pyramid/food web and remove a species to analyze impact 		Vocabulary: <ul style="list-style-type: none"> • Ecosystem • Species • Population • Biome • Carnivores • Herbivores • Consumer • Omnivores • Survival • Drought • Climate change • Environmental factors 	
Resources <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ The Needs of Living Things Lesson, source: PBS Learning Media website ○ Ecologists Study the Interactions of Organisms and Their Environment Facts and Pictures, source: The Nature Education Knowledge Project website 			

GRADE: Sixth Grade

DOMAIN: Life Science

CONCEPT: Ecology and Interdependence

- o [Climate Change Affects Ecosystems and the Distribution of Organisms Lesson](#), source: Environmental Science Institute the University of Texas at Austin website

Standard		Performance Objective	
A.L.6.4 Students will classify representative organisms based on characteristic.		A.L.6.4.1 Use a graphic organizer to classify characteristics of organisms. Obtain information about the characteristics (e.g., cones, fruits, seeds, bones, hair, feathers, scales, gills) of plants and animals to classify plants as flowering (e.g., daisies, apple trees) or nonflowering (e.g., ferns, pine trees) and animals as vertebrate (e.g., mammals, fish, amphibians, reptiles, birds) or invertebrate with hard shells (e.g., insects, spiders, clams, snails). A.L.6.4.2 Use observational data to classify characteristics of an animal or plant that are inherited or influenced by the environment.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.6.4.1 (A) Use a graphic organizer to classify characteristics of organisms. Obtain information about the characteristic (e.g., cones, fruits, seeds, bones, hair, feathers, scales, gills) of plants and animals to classify plants as flowering (e.g., daisies, apple trees) or nonflowering (e.g., ferns, pine trees) and animals as vertebrate (e.g., mammals, fish, amphibians, reptiles, birds) or invertebrate with hard shells (e.g., insects, spiders, clams, snails).	A.L.6.4.1 (B) Match characteristics of animals and plants with the major groups: vertebrates (i.e., backbone) vs. invertebrates (i.e., no backbone), and flowering (i.e., seeds) vs. nonflowering (i.e., cones).	A.L.6.4.1 (C) Use pictures to identify major groups of plants with flowers and animals (i.e., vertebrates vs. invertebrates).	
A.L.6.4.2 (A) Use observational data to classify characteristics of an animal or plant that are inherited or influenced by the environment.	A.L.6.4.2 (B) Use observational data to classify characteristics of an animal or plant that are inherited or influenced by the environment.	A.L.6.4.2 (C) Identify characteristics that an animal has inherited from its parents.	
Real-World Connections: <ul style="list-style-type: none"> • Wild resource management (e.g., feral pigs) • DNA analysis • Relations in genetic composition between species (e.g., linking dinosaur DNA to birds) • Trip to zoo to compare and contrast characteristics of animals 		Vocabulary: <ul style="list-style-type: none"> • Vertebrates • Invertebrates • Flowering • Nonflowering • Reptile • Characteristic • Inherited • Environment 	

GRADE: Sixth Grade

DOMAIN: Life Science

CONCEPT: Adaptations and Diversity

- | | | |
|--|---|---|
| | <ul style="list-style-type: none">• Seeds• Cones• Amphibian | <ul style="list-style-type: none">• Scales• Gills• Feathers |
|--|---|---|

Resources

- **Instructional Material:**

- [Unit How Animals Work Lesson 1 Animal Classification](#), source: MPalaLive.org Pearls of the Planet website
- [What am I? Classifying Living Things Lesson](#), source: CPALMS.org website
- [Classifying Living Things Lesson](#), source: Betterlesson.com website
- [Classify It Lesson to show students that many kinds of organisms can be sorted into groups in many ways using various features to decide which organisms belong to which group](#), source: American Association for the Advancement of Science Netlinks website

GRADE: Sixth Grade

DOMAIN: Physical Science

CONCEPT: Motions, Forces, and Energy

Standard		Performance Objective	
<p>A.P.6.6 Students will demonstrate an understanding of Newton’s laws of motion using real world models and examples.</p>		<p>A.P.6.6.1 Use models to predict how the motion of objects with different masses will be affected by the same amount of force (e.g., which will travel farther, a golf ball or a ping-pong ball).</p> <p>A.P.6.6.2 Identify the effect of gravity or friction on the motion of an object (e.g., football thrown in an arc, skateboard slows down)</p> <p>A.P.6.6.3 Predict the motion of an object according to its direction, speed, and/or acceleration.</p>	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
<p>A.P.6.6.1 (A) Use models to predict how the motion of objects with different masses will be affected by the same amount of force (e.g., which will travel farther, a golf ball or a ping-pong ball).</p>	<p>A.P.6.6.1 (B) Sort items that can move (e.g., golf ball vs. mountain).</p>	<p>A.P.6.6.1 (C) Identify an object that can move and an object that cannot move.</p>	
<p>A.P.6.6.2 (A) Identify the effect of gravity or friction on the motion of an object (e.g., football thrown in an arc, skateboard slows down).</p>	<p>A.P.6.6.2 (B) Identify the effect of gravity on the motion of two objects (e.g., a football and a feather thrown in the air).</p>	<p>A.P.6.6.2 (C) Identify the effect of gravity on a ball thrown in the air.</p>	
<p>A.P.6.6.3 (A) Predict the motion of an object according to its direction, speed, and/or acceleration.</p>	<p>A.P.6.6.3 (B) Compare the motion of two objects according to direction, speed, and/or acceleration.</p>	<p>A.P.6.6.3 (C) Identify the motion of an object according to direction and speed.</p>	
<p>Real-World Connections:</p> <ul style="list-style-type: none"> • Life skills • Job skills • Leisure/recreation/sports • Cooking 		<p>Vocabulary</p> <ul style="list-style-type: none"> • Motion • Gravity • Texture • Speed • Direction • Rate • Friction • Speed • Acceleration 	
<p>Resources</p> <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Laws of Motion - Real-life applications, source: Scienceclarified.com website ○ Newton’s Laws of Motion Lesson, source: Khan Academy website ○ Newton’s Laws of Motion Lesson, source: Betterlesson.com website 			

GRADE: Sixth Grade

DOMAIN: Physical Science

CONCEPT: Motions, Forces, and Energy

- [Hands-on Activity: Newton Rocket Car](#), source: Teach Engineering STEM Curriculum for K12 website

GRADE: Sixth Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth and the Universe

Standard		Performance Objective	
A.E.6.8 Students will identify Earth’s place in the universe and the interactions of the solar system (sun, planets, their moons, comets, and asteroids).		A.E.6.8.1 Identify the characteristics and movements of objects in our solar system (including planets, moons, asteroids, comets, and meteors). A.E.6.8.2 Identify modern techniques used to explore our solar system’s position in the universe. A.E.6.8.3 Use models to illustrate phases of the moon.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.6.8.1 (A) Identify the characteristics and movements of objects in our solar system (including planets, moons, asteroids, comets, and meteors).	A.E.6.8.1 (B) Demonstrate the movement of Earth around the sun.	A.E.6.8.1 (C) Identify objects in the solar system.	
A.E.6.8.2 (A) Identify modern techniques used to explore our solar system’s position in the universe.	A.E.6.8.2 (B) Explain the function of a telescope.	A.E.6.8.2 (C) Use pictures to identify tools that are used to study space (e.g., telescope, satellite).	
A.E.6.8.3 (A) Use models to illustrate phases of the moon.	A.E.6.8.3 (B) Label the different moon phases.	A.E.6.8.3 (C) Compare full-moon to half-moon.	
Real-World Connections: <ul style="list-style-type: none"> Solar system video Picture of moon and phases Sky observations 		Vocabulary: <ul style="list-style-type: none"> Comet Phases Asteroids Telescope Orbit Solar system 	
Resources <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> The Phases of the Moon for Kids Lesson, source: Ducksters Education Site Earth's Place in the Universe Lessons, source: National Science Teachers Association NSTA Library Solar System Classroom Activities & Resources, source: The University of Texas at Austin McDonald Observatory website Earth's Place in the Universe Lesson, source: PBS Learning Media website Solar System model modules about space-related topics, games, videos, and crafts, source: Space Place NASA website Voyage - A Journey Through our Solar System Lesson 1, source: Mercury Surface, Space Environment, Geochemistry, and Ranging (MESSENGER) website Our Solar System, source Betterlesson.com website 			

GRADE: Sixth Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth and the Universe

- **Videos:**

- [Explore the Solar System | Nat Geo Kids Solar System Playlist](#) [YouTube Videos]

Teacher Resource Guide for Seventh Grade MS AAAS for Science

GRADE: Seventh Grade
 DOMAIN: Life Science
 CONCEPT: Ecology and Interdependence

Standard	Performance Objective	
A.L.7.3 Students will identify the water cycle and its relationship among ecosystems to sustain life on Earth.	A.L.7.3.1 Label the cycling of water through ecosystems to organisms. A.L.7.3.2 Identify how the interruption of the water cycle affects populations of organisms.	
I Can Statements		
MOST COMPLEX ←	→ LEAST COMPLEX	
A.L.7.3.1 (A) Label the cycling of water through ecosystems to organisms.	A.L.7.3.1 (B) Identify a specific relationship between an organism and a part of the water cycle.	A.L.7.3.1 (C) Identify the water cycle.
A.L.7.3.2 (A) Identify how the interruption of the water cycle affects populations of organisms.	A.L.7.3.2 (B) Explain that the lack of water or quality of water will affect a specific organism.	A.L.7.3.2 (C) Indicate that organisms need water to survive.
Real-World Connections: <ul style="list-style-type: none"> • Water pollution (e.g., agricultural runoff, urban runoff) • Water quality • Water resource management • Aquatic/marine wildlife health (e.g., impact of an oil spill) 	Vocabulary <ul style="list-style-type: none"> • Water • Relationship • Ecosystem • Water cycle • Organism • Interruption • Population • Water quality • Evaporation • Precipitation • Condensation • Transpiration • Ground water • Collection • Surface runoff 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ The Water Cycle Lesson, source: NASA Science website ○ Why Is the Water Cycle Important to Humans & Plants Lesson, source: sciencing.com website ○ Summary of the Water Cycle Lesson, source: U.S. Geological Survey Water Cycle for Kids website ○ The Water Cycle Lesson, source: Khan Academy website ○ Humans and The Water Cycle Lesson, source: Ducksters Education website ○ Humans and the Water Cycle Lesson, source: Science Learning Hub website ○ The Water Cycle Lesson, source: National Geographic Kids website 		

GRADE: Seventh Grade
 DOMAIN: Physical Science
 CONCEPT: Organization of Matter and Chemical Interactions

Standard		Performance Objective	
A.P.7.5A Students will identify the physical properties of matter.		A.P.7.5A.1 Using pictures, drawings, or models, sort substances by physical properties (e.g., appearance, texture, color, strength, temperature, flexibility). A.P.7.5A.2 Use pictures to match substances to its state of matter (e.g., solid, liquid, gas).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.7.5A.1 (A) Using pictures, drawings, or models, sort substances by physical properties (e.g., appearance, texture, color, strength, temperature, flexibility).	A.P.7.5A.1 (B) Using pictures, drawings, or models, match substances by physical properties (e.g., appearance, texture, temperature, color).	A.P.7.5A.1 (C) Using pictures, drawings, or models, identify substances by physical properties (e.g., appearance, texture, temperature, color).	
A.P.7.5A.2 (A) Use pictures to match substances to its state of matter (e.g., solid, liquid, gas).	A.P.7.5A.2 (B) Identify two (2) states of matter (e.g., solid, liquid, gas).	A.P.7.5A.2 (C) Differentiate between two (2) states of matter (e.g., solid, liquid, gas).	
Real-World Connections: <ul style="list-style-type: none"> • Cooking • Job skills • Sorting • Classification • Problem solving 		Vocabulary: <ul style="list-style-type: none"> • Ice • Solid • Liquid • Gas • Appearance • Texture • Color • Temperature • Strength • Flexibility • Properties • Matter 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ (5.5A) Physical Properties of Matter Lesson, source: Center for Educational Outreach Super STAAR (Science Teaching and Assessment Resources from Baylor College of Medicine ○ Structure and Properties of Matters 5th Grade Unit Teacher Manual, source: McCracken County Schools Paducah, Kentucky website ○ Structure and Properties of Matter Lesson, source: Next Generation Science Standards National Science Teachers Association website ○ Properties of Matter Lesson, source: Study.com website ○ Properties of Matter for Kids, source: Scienceshorts.com website ○ Introduction to Matter the Stuff Around You Lesson, source: Radar's Chem4kids.com website ○ What Is Matter Lesson, source: New York University Education website • Videos: <ul style="list-style-type: none"> ○ Properties of Matter Video for Kids, source: Easy Science for Kids website 			

GRADE: Seventh Grade
 DOMAIN: Physical Science
 CONCEPT: Organization of Matter and Chemical Interactions

Standard		Performance Objective	
A.P.7.5B Students will identify the effects of temperature the physical state of matter.		A.P.7.5B.1 Make predictions about the effect of temperature on the state of matter (e.g., expansion, contraction, melting, boiling, evaporation).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.7.5B.1 (A) Make predictions about the effect of temperature on the state of matter (e.g., expansion, contraction, melting, boiling, evaporation).		A.P.7.5B.1 (B) Explain the effect of temperature on the state of matter (e.g., expansion, contraction, melting, boiling, evaporation).	A.P.7.5B.1 (C) Select a characteristic of a state of matter exposed to a temperature change (e.g., expansion, contraction, melting, boiling, evaporation).
Real-World Connections: <ul style="list-style-type: none"> • Cooking • Job skills • Problem solving 		Vocabulary: <ul style="list-style-type: none"> • Matter • Temperature • Prediction • Expansion • Contraction • Melting • Boiling • Evaporation • Characteristic • Change 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ What is the Effect of Temperature on States of Matter, source: sciencing.com website ○ Temperature Changes Everything Lesson, source: American Association for the Advancement of Science Netlinks website ○ Effects of Temperature and Pressure on State Science Games, source: Legends of Learning website ○ Changing States of Matter Lesson, source: Radar’s Chem4kids.com website ○ The Effect of Heat: Simple Experiments 3ith Solids, Liquids and Gases Lesson, source: Science in School the European Journal for Science Educators ○ The Effects of Heat on Matter Lesson, source: United Fire Brigades’ Association of New Zealand website ○ What Is Matter Lesson, source: New York University Education website • Videos: <ul style="list-style-type: none"> ○ Properties of Matter Video for Kids, source: Easy Science for Kids website 			

GRADE: Seventh Grade
 DOMAIN: Physical Science
 CONCEPT: Organization of Matter and Chemical Interactions

Standard		Performance Objective
A.P.7.5D Students will identify chemical properties of matter.		<p>A.P.7.5D.1 Use models to identify chemical changes of matter; distinguish between physical and chemical changes.</p> <p>A.P.7.5D.2 Explain how chemical changes affect the properties of a substance.</p> <p>A.P.7.5D.3 Use observational data and models to identify what happens when two or more substances undergo a chemical reaction.</p>
I Can Statements		
MOST COMPLEX ←		→ LEAST COMPLEX
A.P.7.5D.1 (A) Use models to identify chemical changes of matter; distinguish between physical and chemical changes.	A.P.7.5D.1 (B) Sort items and pictures by physical or chemical change.	A.P.7.5D.1 (C) Identify a chemical change.
A.P.7.5D.2 (A) Explain how chemical changes affect the properties of a substance.	A.P.7.5D.2 (B) State changes to a substance as a result of a chemical change (e.g., color, smell)	A.P.7.5D.2 (C) Select pictures that demonstrate chemical change of a substance.
A.P.7.5D.3 (A) Use observational data and models to identify what happens when two or more substances undergo a chemical reaction.	A.P.7.5D.3 (B) Select two (2) substances that could produce a chemical reaction.	A.P.7.5D.3 (C) Identify evidence of a chemical reaction.
Real-World Connections: <ul style="list-style-type: none"> • Cooking • Cleaning • Job skill • Safety hazards • Science lab safety • Fire safety 		Vocabulary <ul style="list-style-type: none"> • Physical change • Chemical change • Chemical reaction • Physical properties • Evidence • Chemical properties • Data
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Chemical Properties: Lesson for Kids, source: Study.com website ○ Chemical Properties of Matter Lesson, source: CK12.org website ○ Properties of Matter for Kids, source: Scienceshorts.com website ○ Introduction to Matter the Stuff Around You Lesson, source: Radar's Chem4kids.com website ○ What Is Matter Lesson, source: New York University Education website ○ Properties of Matter Video for Kids, source: Easy Science for Kids website 		

GRADE: Seventh Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth's Systems and Cycles

Standard		Performance Objective	
A.E.7.9A Students will identify factors that could impact local and global weather (e.g., sun, wind, ocean, temperature, current).		A.E.7.9A.1 Identify differences in weather across varying geographical regions. A.E.7.9A.2 Identify tools used to predict weather patterns and conditions.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.7.9A.1 (A) Identify differences in weather across varying geographical regions.	A.E.7.9A.1 (B) Given the region, identify the type of weather.	A.E.7.9A.1 (C) Identify weather where you live.	
A.E.7.9A.2 (A) Identify tools used to predict weather patterns and conditions.	A.E.7.9A.2 (B) Select a tool used to measure weather.	A.E.7.9A.2 (C) Sort tools according to their purpose. (e.g., mechanical, kitchen, weather)	
Real-World Connections: <ul style="list-style-type: none"> • Show maps • Weather channel • Video on weather tools 		Vocabulary: <ul style="list-style-type: none"> • Geographical • Region • Pattern • Predict • Weather tools (e.g., barometer, radar, anemometer, weather vane, rain gauge, thermometer) 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Solstice: Articles and Websites, source: National Geographic website ○ What Makes a Climate Lesson, source: Geography4kids.com website ○ Characteristics of World Weather and Climate, source: Climateandweather.net website ○ Humans and the Water Cycle Lesson, source: Science Learning Hub website ○ Climate Basics for Kids, source: Center for Climate and Energy Solutions (C2ES) website ○ NOAA- Weather Systems: lessons, activities and resources, source: NOAA.gov ○ Weather Forecasting Lesson, source: Weather Wizkids website ○ Instruments That Are Used to Predict Weather Lesson, source: Sciencing.com website ○ Forecasting - A Meteorologist's Toolbox: Gathering Weather Data Lesson ○ Weather 1: Weather Patterns Lesson, source: American Association for the Advancement of Science Netlinks website • Videos: <ul style="list-style-type: none"> ○ How Earth's Tilt Causes Seasons, source: www.khanacademy.org 			

GRADE: Seventh Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth's Systems and Cycles

Standard		Performance Objective	
A.E.7.9C Students will demonstrate a basic understanding that the seasons are the direct result of the Earth's tilt and the intensity of sunlight on the Earth's hemispheres.		A.E.7.9C.1 Classify weather conditions (e.g., temperature, precipitation) typically found during each season.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.7.9C.1 (A) Classify weather conditions (e.g., temperature, precipitation) typically found during each season.	A.E.7.9C.1 (B) Use pictures and data to describe types of daily and seasonal weather changes.	A.E.7.9C.1 (C) Use pictures to identify daily and seasonal weather.	
Real-World Connections: <ul style="list-style-type: none"> • Video on seasons • Types of precipitation • Choosing correct clothing for each season/weather condition 		Vocabulary: <ul style="list-style-type: none"> • Season • Condition • Precipitation • Temperature 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Weather Forecasting Lesson, source: Weather Wizkids website ○ Season Facts and Pictures, source: COSMOS—The SAO Encyclopedia of Astronomy ○ The Reason for the Seasons Lesson, source: National Geographic website ○ The Science of the Seasons for Kids, source: Ducksters Education website ○ What Causes the Seasons Online Lesson, source: University of Illinois Extension website ○ What Are Seasons, source: Theschoolrun.com website ○ Four Seasons Lesson, source: Easyscienceforkids.com website • Videos: <ul style="list-style-type: none"> ○ Weather systems & patterns lessons, activities and general information, source: National Oceanic and Atmospheric Administration (NOAA) 			

Teacher Resource Guide for Eighth Grade MS AAAS for Science

GRADE: Eighth Grade

DOMAIN: Life Science

CONCEPT: Reproduction and Heredity

Standard		Performance Objective	
A.L.8.2A Students will demonstrate an understanding of how sexual reproduction results in offspring with genetic variation.		A.L.8.2A.1 Provide examples of genetic variation (e.g., eye color, hair color, height, plant stem height).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.8.2A.1 (A) Provide examples of genetic variation (e.g., eye color, hair color, height, plant stem height).		A.L.8.2A.1 (B) Identify examples of genetic variation (e.g., eye color, hair color, height, plant stem height).	
A.L.8.2A.1 (C) Match examples of genetic variation (e.g., eye color, hair color, height, plant stem height).			
Real-World Connections: <ul style="list-style-type: none">• Share pictures of your family• Compare traits of classmates• Identify similar traits in people and plants		Vocabulary <ul style="list-style-type: none">• Reproduction• Genetics• DNA• Traits• Genes• Height• Sexual reproduction• Asexual reproduction	
Resources <ul style="list-style-type: none">• Instructional Material:<ul style="list-style-type: none">○ Sexual Reproduction and Asexual Reproduction Lesson Plan – A Complete Science Lesson Using the 5e Method of Instruction, source: Keslerscience.com○ Sexual Reproduction and Genetic Variation Science Games, source: Legends of Learning website○ Genetic Variation - Discusses cellular processes that produce genetically unique individuals, source:○ Examples of Genetic Diversity Lesson, source: sciencing.com website○ Introduction to Heredity and Traits Lessons, source: Genetic Science Learning Center of University of Utah Health Sciences website○ Genetic Variation and Natural Selection Lesson, source: Betterlesson.com website○ Biology for Kids Hereditary Patterns Lesson, source: Ducksters Education website• Videos:<ul style="list-style-type: none">○ Asexual and Sexual Reproduction- Amoeba Sisters [YouTube Video]○ Bill Nye the Science Guy-Cells [YouTube Video]			

GRADE: Eighth Grade
 DOMAIN: Life Science
 CONCEPT: Reproduction and Heredity

Standard		Performance Objective	
A.L.8.2B Students will identify environmental factors that influence the transfer of genetic information.		A.L.8.2B.1 Identify environmental and genetic factors that influence the growth of organisms. A.L.8.2B.2 Classify traits by genotype and phenotype. A.L.8.2B.3 Use models to predict if offspring will have a recessive or dominant trait.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.8.2B.1 (A) Identify environmental and genetic factors that influence the growth of organisms.	A.L.8.2B.1 (B) Select an environmental and a genetic factor that influences the growth of organisms.	A.P.8.2B.1 (C) Select a factor that influences the growth of organisms.	
A.L.8.2B.2 (A) Classify traits by genotype and phenotype.	A.L.8.2B.2 (B) Match the traits of parents with their offspring (e.g., hair color, flower shape)	A.P.8.2B.2 (C) Identify plant or animal traits (e.g. eye color, hair color)	
A.L.8.2B.3 (A) Use models to predict if offspring will have a recessive or dominant trait.	A.L.8.2B.3 (B) Use a Punnett square to identify the offspring with recessive and dominant traits.	A.P.8.2B.3 (C) Identify a Punnett square. Identify a dominant trait in a Punnett square.	
Real-World Connections: <ul style="list-style-type: none"> Select varieties of seeds to plant (e.g. conduct an experiment to see which plants thrive in various conditions) Match relatives based upon dominant traits Choose pet breeds based upon their genetic makeup (e.g. hyperactive, docile, long hair, short hair, small frame) 		Vocabulary <ul style="list-style-type: none"> Environmental factor Genetic Factor Genotype Phenotype Recessive trait Dominant trait Punnett Square Nutrient DNA Offspring Growth Traits Hormones 	
Resources: <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> Phenotype and Genotype, source: Science Learning Hub Traits Unit, source: State of New Jersey Department of Education website Manipulating Punnett Squares Lesson, source: CPALMS.org website Peas in a Pod: Genetics Lesson, source: Mensaforkids.org website 			

GRADE: Eighth Grade

DOMAIN: Life Science

CONCEPT: Reproduction and Heredity

- [Hereditary Patterns Lesson](#), Ducksters Education website
- [What Is a Gene](#)
- [What is a Gene Lesson](#), source: Nemours Reading Bright Start
- [Genes and Traits Lesson](#), source: Legends of Learning website
- **Videos:**
 - [Genotype Vs Phenotype Video](#) [YouTube Video]
 - [Learn Biology: How to Draw a Punnett Square](#) [YouTube Video]

GRADE: Eighth Grade
 DOMAIN: Life Science
 CONCEPT: Adaptations and Diversity

Standard		Performance Objective	
A.L.8.4A Students will identify environment and genetic factors which increase an individuals' likelihood of surviving in a changing environment.		A.L.8.4A.1 Identify environmental factors which promote an organism's survival. A.L.8.4A.2 Identify genetic factors which promote an organism's survival.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.L.8.4A.1 (A) Identify environmental factors which promote an organism's survival.	A.L.8.4A.1 (B) Match the organism to the environment where it would best survive.	A.L.8.4A.1 (C) Identify different organisms and environmental factors.	
A.L.8.4A.2 (A) Identify genetic factors which promote an organism's survival.	A.L.8.4A.2 (B) Match pictures of an organism with its specific characteristics which promote its survival.	A.L.8.4A.2 (C) Recognize that certain characteristics promote an organism's survival.	
Real-World Connections: <ul style="list-style-type: none"> • "Survival of the fittest" — Darwin • Natural adaptations (e.g., adaptation of bacteria to resist antibiotics, cockroaches to avoid poisoned bait) • Genetically-modified organisms (GMOs) 		Vocabulary: <ul style="list-style-type: none"> • Genetics • Organism • Environmental • Survival • Likelihood • Environment • Characteristics • Adaptation • Promote 	
Resources <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ The Needs of Living Things Lesson, source: PBS Learning Media website ○ Top 10 Animal Adaptations Lessons, source: AnimalPlanet.com website ○ The Environment: Living and Non-living Things Lesson, source: Victoria Australia Department of Education and Training website ○ The Environment Overview Lesson, source: Ducksters Education website ○ Habitat and Adaptation Lesson, source: World Wildlife Fund website • Videos: <ul style="list-style-type: none"> ○ Regulation - It's All About Homeostasis Lesson, source: Biology4Kids.com website 			

GRADE: Eighth Grade
 DOMAIN: Life Science
 CONCEPT: Adaptations and Diversity

Standard		Performance Objective
A.L.8.4B Students will compare similarities and differences between fossils and living organisms.		A.L.8.4B.1 Use graphic organizers to compare and contrast fossils and living organisms. A.L.8.4B.2 Classify groups of organisms with similar characteristics. A.L.8.4B.3 Match fossils to the current modern-day organisms.
I Can Statements		
MOST COMPLEX ←		→ LEAST COMPLEX
A.L.8.4B.1 (A) Use graphic organizers to compare and contrast fossils and living organisms.	A.L.8.4B.1 (B) Match fossil to life forms or related environment.	A.L.8.4B.1 (C) Match the fossil to the organism that created it.
A.L.8.4B.2 (A) Classify groups of organisms with similar characteristics.	A.L.8.4B.2 (B) Match organisms as the same species (e.g., all dogs, all cats).	A.L.8.4B.2 (C) Identify an organism as either a plant or an animal.
A.L.8.4B.3 (A) Match fossils to the current modern-day organisms.	A.L.8.4B.3 (B) Match a fossil with its current living counterpart through the use of pictures, picture symbols, or concrete objects.	A.L.8.4B.3 (C) Identify a modern-day fossil.
Real-World Connections: <ul style="list-style-type: none"> Observe how things in our world change over time 		Vocabulary <ul style="list-style-type: none"> Fossils Organism Contrast Compare Counterpart Characteristics Classify Environment Species
Resources <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> Can you tell the difference between an artifact and a fossil? Let's Find Out Lesson, source: Archeology.mrdonn.org website Biology 101: The Basics Evidence of Evolution – Fossils Lesson, source: Kidsbiology.com website Fossils and Living Creatures Lesson, source: American Museum of Natural History website Paleontology Lesson, source: National Geographic website 10 Facts About Fossils Lesson, source: sciencing.com website 		

GRADE: Eighth Grade
 DOMAIN: Physical Science
 CONCEPT: Motions, Forces and Energy

Standard		Performance Objective	
A.P.8.6 Students will demonstrate a basic understanding of the properties and behaviors of sound waves.		A.P.8.6.1 Identify technology that used sound waves. A.P.8.6.2 Identify how sound waves react when they interact with various types of matter (e.g., soft, high, pitch, loud).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.P.8.6.1 (A) Identify technology that used sound waves.	A.P.8.6.1 (B) Match objects, tools, and instruments to examples of sounds of various pitch.	A.P.8.6.1 (C) Identify the source of a specific sound	
A.P.8.6.2 (A) Identify how sound waves react when they interact with various types of matter (e.g., soft, high, pitch, loud).	A.P.8.6.2 (B) Identify properties that affect pitch (e.g., a large bell makes a deeper sound than a smaller bell).	A.P.8.6.2 (C) Use a model to recognize that sound waves are transmitted by vibrations.	
Real-World Connections: <ul style="list-style-type: none"> • Playing musical instruments that make different sounds • Lightning and thunder • Listening to music 		Vocabulary: <ul style="list-style-type: none"> • Vibrate • Volume • Pitch • Sound waves • Wavelength • Compression • Crest • Trough • Rarefaction 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ The Phenomenon of Sound: Waves, source: Discovery Education website ○ Physics for Kids Sound Wave Characteristics Lesson, source: Ducksters Education website ○ Physics for Kids Basics of Sound Lesson, source: Ducksters Education web site ○ Behavior of Soundwaves, source: Science.howstuffworks.com website ○ The Phenomenon of Sound Waves Lesson, source: DiscoveryEducation.com website ○ Sound Waves and Music Lesson, source: Physicsclassroom.com website • Videos: <ul style="list-style-type: none"> ○ What are Sound Waves? - Definition, Types & Uses - Video & Lesson, source: www.study.com 			

GRADE: Eighth Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth's Structure and History

Standard		Performance Objective	
A.E.8.7 Students will identify major events and processes that change the Earth over time.		A.E.8.7.1 Identify the layers of Earth. A.E.8.7.2 Identify older fossils as being found in deeper, older rock layers.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.8.7.1 (A) Identify the layers of the Earth.	A.E.8.7.1 (B) Use models to illustrate layers of Earth.	A.E.8.7.1 (C) Identify Earth's crust as the outer most layer upon which we live.	
A.E.8.7.2 (A) Identify older fossils as being found in deeper, older rock layers.	A.E.8.7.2 (B) Match fossil to the organism that created it.	A.E.8.7.2 (C) Identify a fossil.	
Real-World Connections: <ul style="list-style-type: none"> • Video on layers of earth • Models of layers • Video on fossils 		Vocabulary: <ul style="list-style-type: none"> • Amplitude • Crust • Mantle • Layer • Fossil 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Science for Kids: Composition of the Earth Lesson, source: Ducksters.com ○ Fossils information and pictures, source: DK Find Out website ○ The Forces that Change the Face of Earth Lesson, source: the Ohio State University College of Education and Human Ecology's Beyond Penguins website ○ Earth Processes Lesson, source: British Geological Survey One Geology website ○ 7 Ways the Earth Changes in the Blink of an Eye Lesson, source: Livescience.com website ○ Climate Lesson, source: Weather Wizkids website ○ Changing Landforms Lesson, source: Science A-Z website ○ Water Cycle Hydrologic Cycle Lesson 			

GRADE: Eighth Grade

DOMAIN: Earth and Space Science

CONCEPT: Earth's Systems and Cycles

Standard		Performance Objective	
A.E.8.9B Students will demonstrate an understanding of natural hazards and identify precautions for these conditions.		A.E.8.9B.1 Identify technologies that predict or warn communities in case of a natural hazard. A.E.8.9B.2 Math appropriate safety precautions in relation to specific weather conditions or events (e.g., thunderstorms, hurricanes, floods, tornadoes).	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.8.9B.1 (A) Identify technologies that predict or warn communities in case of a natural hazard.	A.E.8.9B.1 (B) Identify types of technologies that give warnings (e.g. fire alarms, timers, clocks).	A.E.8.9B.1 (C) Identify types of natural hazards.	
A.E.8.9B.2 (A) Math appropriate safety precautions in relation to specific weather conditions or events (e.g., thunderstorms, hurricanes, floods, tornadoes).	A.E.8.9B.2 (B) Identify safety precautions to take during severe weather conditions.	A.E.8.9B.2 (C) Identify severe weather conditions (e.g. floods, hurricanes, tornadoes).	
Real-World Connections: <ul style="list-style-type: none"> • News • Guest speaker: meteorologist • Weather-related experiences 		Vocabulary: <ul style="list-style-type: none"> • Technology (e.g., siren, fire alarm, weather radio) • Natural hazard 	
Resources: <ul style="list-style-type: none"> • Instructional Material: <ul style="list-style-type: none"> ○ Fossils information and pictures, source: DK Find Out website ○ Protecting Children's Health During and After Natural Disasters Lesson, source: Environmental Protection Agency website ○ Let's Learn to Prevent Disasters - Fun Ways for Kids to Join in Risk Reduction Lesson, source: United Nations Office for Disaster Risk Reduction website ○ How We'll Predict the Next Natural Disaster Article, source: Discover Magazine website ○ Natural Disasters Grade 6-9 Lessons, source: PBS website ○ Curricular Unit: Natural Disasters: Earthquakes, Volcanoes, Tornadoes & More, source: Teaching Engineering STEM Curriculum for K12 website ○ Natural Disasters Lesson, source: CPALMS.org website ○ Natural Hazards Lesson, source: PBL Learning Media website ○ Youth Emergency Preparedness Curriculum-Ready Kids Lesson, source: FEMA website 			

GRADE: Eighth Grade
 DOMAIN: Earth and Space Science
 CONCEPT: Earth's Systems and Cycles

Standard		Performance Objective	
A.E.8.10 Students will identify the impact on natural resources by an increase in population.		A.E.8.10.1 Classify objects and materials as trash and recyclables (e.g., plastic, paper, and glass). A.E.8.10.2 Match human activities with their effect on Earth's resources.	
I Can Statements			
MOST COMPLEX ←		→ LEAST COMPLEX	
A.E.8.10.1 (A) Classify objects and materials as trash and recyclables (e.g., plastic, paper, and glass).	A.E.8.10.1 (B) Sort objects as trash and recyclables (e.g., plastic, glass, paper)	A.E.8.10.1 (C) Identify objects that could be recycled.	
A.E.8.10.2 (A) Match human activities with their effect on Earth's resources.	A.E.8.10.2 (B) Choose a way that humans have changed the land (e.g., cut down trees, grow a field of crops, build a city).	A.E.8.10.2 (C) Identify the environment that has not been changed by humans (e.g., forest vs. subdivisions).	
Real-World Connections: <ul style="list-style-type: none"> Sort materials that are recyclable Video on Earth's resources Human activity on resources 		Vocabulary: <ul style="list-style-type: none"> Recycle Plastic Renewable resources Nonrenewable resources 	
Resources: <ul style="list-style-type: none"> Instructional Material: <ul style="list-style-type: none"> What Can I Recycle?, source: Waste Management Inc. website Human Impact on the Environment, source: Wikipedia Recycle This Lesson, source: NASA Climate Kids website Recycling for Kids Lesson, source: Sciencekids.co.nz website Reduce, Reuse, Recycle Resources for Students and Educators, source: Environmental Protection Agency website The Environment Recycling Lesson, source Ducksters Education website Greenhouse Effect Lesson, source: NASA Climate Kids website You and the Environment Lesson, source: Women and Children's Health Network Kid's Health website Climate Basics for Kids, source: Center for Climate and Energy Solutions (C2ES) website The Environment Air Pollution Lesson, source: Ducksters Education website Humans and the Water Cycle Lesson, source: Science Learning Hub website 			