Special Education K-5

2017 Science P.L.U.S. Institute

Roper Mountain Science Center

Greenville, South Carolina

Academic Course Description:

Hands-on, inquiry-based activities emphasizing science process skills will provide the vehicles for studying kindergarten through fifth grade South Carolina Science Academic Standards for teachers of students in the self-contained, special education setting. Course topics will provide an overview of all topics covered in the elementary grade levels, as well as how to adapt specific activities to the students' individual learning needs. Participants will learn how to access the SC-Alt Support Guide in order to adapt science lesson to the specific needs of their classes. Participants will also learn how to adapt science notebooks for a variety of hands-on investigations. Participants receive a significant quantity of materials for performing the activities in their own classrooms.

	Topics	Activities or Assignments	Correlation to SC Science Academic Standards
Monday	What are the main ideas? Setting Up Notebooks Weather and Climate	What are you doing today to cover the topic? 1.Setting up interactive notebooks. Participants will learn different methods of adapting notebooking for diverse needs. 2.Create rain in a jar. 3.Use the First Weather Buddy and kidsweatherreport.com to complete different notebooking forms. 4.Shaving cream cloud with food coloring to demonstrate the water cycle. 5.Design a dog house to determine the best roof to keep the dog dry. 6.Make "My Weather Station." 7.Clouds by Altitude 8.Create weather tools	<u>Kindergarten</u> K.E.3A.1 Analyze and interpret local weather condition data (including precipitation, wind, temperature, and cloud cover) to describe weather patterns that occur from day to day, using simple graphs and pictorial weather symbols. K.E.3A.2 Develop and use models to predict seasonal weather patterns and changes. K.E.3A.4 Define problems caused by the effects of weather on human activities and design solutions or devices to solve the problem. <u>2nd Grade</u> 2.E.2A.1 Analyze and interpret data from observations and measurements to describe local weather conditions (including temperature, wind, and forms of precipitation). 2.E.2A.2 Analyze local weather data to predict daily and seasonal patterns over time. <u>4th Grade</u> 4.E.2A.1 Obtain and communicate information about some of the gases in the atmosphere (including oxygen, nitrogen, and water vapor) to develop models that exemplify the composition of Earth's atmosphere where weather takes place. 4.E.2A.2 Develop and use models to explain how water changes as it moves between the atmosphere and Earth's surface during each phase of the water cycle (including evaporation, condensation, precipitation, and runoff). 4.E.2B.1 Analyze and interpret data from observations, measurements, and weather maps to describe patterns in local weather conditions (including temperature, precipitation, wind speed/direction, relative humidity, and cloud types) and predict changes in weather over time.

Tuesday	What are the main ideas? Matter & Mixtures – am Energy, Forces, Motion – pm	1.What material? The students will determine which material will be best for making a material for a specific situation. 2. Sink & float Investigation 3. Chex Mix and Kool Aid to model mixtures and solutions 4.Make a flipbook about changing states of matter 5. Make shadow writing projects: "Me and My Shadow" 6. Animal hunt in a cave using mirrors and flashlights 7. Opaque, transparent, translucent hunt 8. Sound investigations	<u>Kindergarten</u> K.P.4A.1 Analyze and interpret data to compare the qualitative properties of objects (such as size, shape, color, texture, weight, flexibility, attraction to magnets, or ability to sink or float) and classify objects based on similar properties. K.P.4A.2 Develop and use models to describe and compare the properties of different materials (including wood, plastic, metal, cloth, and paper) and classify materials by their observable properties, by their uses, and by whether they are natural or human-made. K.P.4A.3 Conduct structured investigations to answer questions about which materials have the properties that are best suited to solve a problem or need. <u>1st Grade</u> 1.P.2A.3 Conduct structured investigations to answer questions about how shadows change when the position of the light source changes. 1.P.2A.4 Develop and use models to describe what happens when light shines on mirrors based on observations and data collected. <u>2nd Grade</u> 2.P.3A.1 Analyze and interpret data from observations and measurements to describe the properties used to classify matter as a solid or a liquid. 2.P.3A.2 Develop and use models to exemplify how matter can be mixed together and separated again based on the properties of the mixture. <u>3rd Grade</u> 3.P.2A.2 Construct explanations using observations and measurements to describe how matter can be classified as a solid, liquid or gas. <u>4th Grade</u> 4.P.4A.3 Obtain and communicate information to explain how the visibility of an object is related to light. 4.P.4A.5 Plan and conduct scientific investigations to explain how light behaves when it strikes transparent, translucent, and opaque materials. 4.P.4B.1 Plan and conduct scientific investigations to test how different variables affect the properties of sound (including pitch and volume). 4.P.4B.2 Analyze and interpret data from observations and measurements to describe how changes in vibration affects the pitch and volume of sound. <u>5th Grade</u> 5.P.2A.1 Analyze and interpret data from observations and measurements of the physical properties of matter (including volume, shape, movement, and spacing of particles) to explain why matter can be classified as a solid, liquid or gas. 5.P.2B.1 Obtain and communicate information to describe what happens to the properties of substances when two or more substances are mixed together.

Wednesday	What are the main ideas? Energy, Forces, & Motion	<u>Fairy Tale & Literature Integration Day</u> 1.Help Rapnzuel escape 2.Robin Hood's arrow shoot 3.New bed for Goldilocks 4. 21 Elephants - present the books and challenge participants to build a bridge to hold 21 elephants 5. Help Superman stop the speeding car 6. Participants select a fairy tale and design an investigation	<u>2nd Grade</u> 2.P.4A.1 Analyze and interpret data from observations and measurements to compare the effects of different strengths and directions of pushing and pulling on the motion of an object. 2.P.4A.2 Develop and use models to exemplify the effects of pushing and pulling on an object. 2.P.4A.3 Construct explanations of the relationship between the motion of an object and the pull of gravity using observations and data collected. 2.P.4A.4 Conduct structured investigations to answer questions about the relationship between friction and the motion of objects. <u>5th Grade</u> 5.P.5A.1 Use mathematical and computational thinking to describe and predict the motion of an object (including position, direction, and speed). 5.P.5A.4 Analyze and interpret data to describe how a change of force, a change in mass, or friction affects the motion of an object. 5.P.5A.5 Design and test possible devices or solutions that reduce the effects of friction on the motion of an object.

Thursday	What are the main ideas? Ecosystems & Organisms	1. Explain how to make biomes (coupons given so teachers can order supplies) 2. Shoe box plant maze 3. Beaks & Feet investigation 4. Oh Deer Game 5. Arctic blubber investigation 6. Create an animal and habitat. Make changes and have animals/plants adapt. 7. Food chain collage. 8. Food web with thumbtacks and rubber bands. 9. Oil Spill 10. Habitat STEM challenges	<u>Kindergarten</u> K.L.2A.1 Obtain information to answer questions about different organisms found in the environment (such as plants, animals, or fungi). K.L.2A.2 Conduct structured investigations to determine what plants need to live and grow (including water and light). K.L.2A.3 Develop and use models to exemplify how animals use their body parts to (1) obtain food and other resources, (2) protect themselves, and (3) move from place to place. K.L.2A.5 Construct explanations from observations of what animals need to survive and grow (including air, water, nutrients, and shelter). K.L.2A.6 Obtain and communicate information about the needs of organisms to explain why they live in particular areas. <u>1st Grade</u> 1.L.5A.1 Obtain and communicate information to construct explanations for how different plant structures (including roots, stems, leaves, flowers, fruits, and seeds) help plants survive, grow, and produce more plants. 1.L.5B.1 Conduct structured investigations to answer questions about what plants need to live and grow (including air, water, sunlight, minerals, and space). 1.L.5B.2 Develop and use models to compare how the different characteristics of plants help them survive in distinct environments (including deserts, forests, and grasslands). <u>2nd Grade</u> 2.L.5A.2 Construct explanations for how structures (including structures for seeing, hearing, grasping, protection, locomotion, and obtaining and using resources) of different animals help them survive. 2.L.5B.1 Obtain and communicate information to describe and compare how animals interact with other animals and plants in the environment. 2.L.5B.2 Develop and use models to exemplify characteristics of animals that help them survive in distinct environments (such as salt and freshwater, deserts, forests, wetlands, or polar lands). 2.L.5B.3 Analyze and interpret data from observations to describe how animals respond to changes in their environment (such as changes in food availability, water, or air). 2.L.5B.4 Construct scientific arguments to explain how animals can change their environments (such as the shape of the land or the flow of water). <u>3rd Grade</u> 3.L.5A.1 Analyze and interpret data about the characteristics of environments (including salt and fresh water, deserts, grasslands, forests, rain forests, and polar lands) to describe how the environment supports a variety of organisms. 3.L.5A.2 Develop and use a food chain model to classify organisms as producers, consumers, and decomposers and to describe how organisms obtain energy. 3.L.5B.1 Obtain and communicate information to explain how changes in habitats (such as those that occur naturally or those caused by organisms) can be beneficial or harmful to the organisms that live there.

			4th Grade 4.L.5B.2 Construct explanations for how structural adaptations (such as the types of roots, stems, or leaves; color of flowers; or seed dispersal) allow plants to survive and reproduce. 4.L.5B.3 Construct explanations for how structural adaptations (such as methods for defense, locomotion, obtaining resources, or camouflage) allow animals to survive in the environment. 5th Grade 5.E.3B.3 Construct scientific arguments to support claims that human activities (such as conservation efforts or pollution) affect the land and oceans of Earth. 5.L.4A.1 Analyze and interpret data to summarize the abiotic factors (including quantity of light and water, range of temperature, salinity, and soil composition) of different terrestrial ecosystems and aquatic ecosystems. 5.L.4A.2 Obtain and communicate information to describe and compare the biotic factors (including individual organisms, populations, and communities) of different terrestrial and aquatic ecosystems. 5.L.4B.1 Analyze and interpret data to explain how organisms obtain their energy and classify an organisms as producers, consumers (including herbivore, carnivore, and omnivore), or decomposers (such as fungi and bacteria). 5.L.4B.2 Develop and use models of food chains and food webs to describe the flow of energy in an ecosystem. 5.L.4B.3 Construct explanations for how organisms interact with each other in an ecosystem (including predators and prey, and parasites and hosts). 5.L.4B.4 Construct scientific arguments to explain how limiting factors (including food, water, space, and shelter) or a newly introduced organism can affect an ecosystem.

Friday	What are the main ideas? Earth & Space	What are you doing today to cover the topic? 1.Landform layered picture 2.Make different landforms and simulate changes 3.Earthquake in sensory tray 4.Shadow clock 5.Solar system headbands and patterning activities	<u>1st Grade</u> 1.E.3A.1 Use, analyze, and interpret data from observations to describe and predict seasonal patterns of sunrise and sunset. 1.E.3A.2 Use data from personal observations to describe, predict, and develop models to exemplify how the appearance of the moon changes over time in a predictable pattern. 1.E.4A.1 Analyze and interpret data from observations and measurements to compare the properties of Earth materials (including rocks, soils, sand, and water). 1.E.4A.2 Develop and use models (such as drawings or maps) to describe patterns in the distribution of land and water on Earth and classify bodies of water (including oceans, rivers and streams, lakes, and ponds). 1.E.4A.3 Conduct structured investigations to answer questions about how the movement of water can change the shape of the land. <u>3rd Grade</u> 3.E.4A.1 Analyze and interpret data from observations and measurements to describe and compare different Earth materials (including rocks, minerals, and soil) and classify each type of material based on its distinct physical properties. 3.E.4A.2 Develop and use models to describe and classify the pattern distribution of land and water features on Earth. 3.E.4B.1 Develop and use models to describe the characteristics of Earth's continental landforms and classify landforms as volcanoes, mountains, valleys, canyons, plains, and islands. 3.E.4B.2 Plan and conduct scientific investigations to determine how natural processes (including weathering, erosion, and gravity) shape Earth's surface. 3.E.4B.3 Obtain and communicate information to explain how natural events (such as fires, landslides, earthquakes, volcanic eruptions, or floods) and human activities (such as farming, mining, or building) impact the environment. <u>4th Grade</u> 4.E.3A.1 Develop and use models of Earth's solar system to exemplify the location and order of the planets as they orbit the Sun and the main composition (rock or gas) of the planets. 4.E.3B.1 Analyze and interpret data from observations to describe patterns in the (1) location, (2) movement, and (3) appearance of the Moon throughout the year. 4.E.3B.2 Construct explanations of how day and night result from Earth's rotation on its axis. 4.E.3B.3 Construct explanations of how the Sun appears to move throughout the day using observations of shadows.

Daily Activities:

- Notebooking
- Adapting lessons and tasks to fit students' individual needs (using SC-Alt Guide)
- Adapted assessments