Grade 5 Suggested Labs and Activities to Support Science Education

The Practice of Science

Experiment or Investigation?	http://www.cpalms.org/Public/PreviewResource/Preview/26705 Students will explain how experiments and other kinds of investigations, such as building a model, observing things in the natural world, or researching a science topic are different. **SC.5.N.1.2:** Explain the difference between an experiment and other types of scientific investigation.
Investigating Variables	http://www.cpalms.org/Public/PreviewResource/Preview/25994 In this inquiry lesson, students will design an experiment to answer the question "How do different surfaces affect the bounce of a ping pong ball?" Students will collect and analyze data as well as identify controls and variables in a scientific experiment. **SC.5.N.1.1:** Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. **SC.5.N.1.3:** Recognize and explain the need for repeated experimental trials. **SC.5.N.1.4:** Identify a control group and explain its importance in an experiment.
Demonstrating How to Conduct a Controlled Investigation Using Sound	http://www.cpalms.org/Public/PreviewResource/Preview/25095 The teacher conducts an investigation to compare the sound

	produced by two different sized pipes (higher pitch, lower pitch, louder, softer). The teacher conducts the experiment multiple times, each time changing different variables. The students are "directors" and are asked to "cut" the scene when they observe something wrong with the experiment. **SC.4.N.1.7:** Recognize and explain that scientists base their explanations on evidence. **SC.4.N.1.4:** Attempt reasonable answers to scientific questions and cite evidence in support. **SC.5.N.2.1:** Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.
Introducing the Process of Investigative Science	http://www.cpalms.org/Public/PreviewResource/Preview/25094 Students are introduced to the process of investigative science through a guided inquiry activity. Given a testable question and materials, students as a class make predictions, and design an investigation with guidance from the teacher. Then in pairs, students do the investigation, collect data, draw conclusions, and discuss ways to improve on the investigative design. After this activity, students will be able to develop independent investigations in this and other subject areas. **SC.5.N.1.1:** Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. **SC.5.N.1.6:** Recognize and explain the difference between

	personal opinion/interpretation and verified observation. **SC.5.N.2.1:** Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence. **SC.5.N.2.2:** Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others.

Earth/ Space Science

Cycling Water Through the Environment	http://www.cpalms.org/Public/PreviewResource/Preview/4971 Water plays a major role in the planet's weather and climate, as well as nourishes people, plants, and animals; it is a crucial ingredient for life on Earth. Earth's natural mechanism for transporting, cleansing, and recycling water between the surface and the atmosphere is referred to as the water cycle. This lesson has students recognize water's different forms and where it exists in the environment. The class will discuss and perform experiments, modeling the water cycle and exploring how salt water can be distilled into fresh water. **SC.5.E.7.1:** Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another **SC.5.E.7.2:** Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes.

Weather and Pressure Systems	http://www.cpalms.org/Public/PreviewResource/Preview/127889 Approaching weather systems are generally associated with atmospheric pressure. This 45 minute lesson is designed to help your students understand what type of weather is associated with low-pressure systems and high-pressure systems. **SC.5.E.7.3:** Recognize how air temperature, barometric pressure, humidity, wind speed and direction, and precipitation determine the weather in a particular place and time.
Galaxies and Solar Systems	http://www.cpalms.org/Public/PreviewResource/Preview/13565 The students will learn all about outer space in this lesson. They will make a model of a galaxy and learn the vocabulary that relates to this topic. The students will also learn how to classify a planet and describe its features. They will be taught about the Earth's position in the solar system as well as that of the other planets in our solar system. The students will also learn how to classify between the different objects that are in our solar system. **SC.5.N.1.2:** Explain the difference between an experiment and other types of scientific investigation. **SC.5.N.2.1:** Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence. **SC.5.E.5.1:** Recognize that a galaxy consists of gas, dust, and many stars, including any objects orbiting the stars. Identify our home galaxy as the Milky Way. **SC.5.E.5.2:** Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets. **SC.5.E.5.3:** Distinguish among the following objects of the Solar System -- Sun, planets, moons, asteroids, comets -- and identify

	Earth's position in it.

Life Science

Name that Organ	http://www.cpalms.org/Public/PreviewResource/Preview/28706 Can you name that organ with one clue? What about two? Students will get the opportunity to research organs and create clue cards with at least four clues that will help others *Name That Organ!* **SC.5.L.14.1:** Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs.
Survival of the Fittest	http://www.cpalms.org/Public/PreviewResource/Preview/27424 This is a five day lesson integrating Science, Reading and Writing. It is developed on a Reading lesson plan format using Shared Reading, Core Reading, Guided Reading and centers but can easily be transferred on to a Science 5E lesson format. The versatility of the lesson and the integration between subjects lends itself to it being widely used among teachers for different reasons; whether the teacher's need be in Science, Reading or Writing the lesson provides opportunities for all areas to be addressed. Most importantly, it offers the busy teacher an opportunity to implement one lesson to cover three subjects. **SC.5.N.1.3:** Recognize and explain the need for repeated experimental trials. **SC.5.L.15.1:** Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.

Exploring Habitats	http://www.cpalms.org/Public/PreviewResource/Preview/28391 If you could live anywhere in the world, where would you live? Do you think you could survive anywhere in the world or in any habitat? What types of adaptations might help you survive in your dream habitat? Many places seem great to visit, but you won't know if it's the place for you unless you know the characteristics of the habitat. This lesson will encourage your students to research habitats and adaptations that allow plants and animals to survive in their natural environments. **SC.5.L.17.1:** Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.

Physical Science

Separating Solid Mixture	http://www.cpalms.org/Public/PreviewResource/Preview/32213 Have you ever considered that toys in a toy box are a mixture? In this lesson, students will explore how to separate solid mixtures based on observable properties such as particle color, shape, size, and magnetic attraction. **SC.5.P.8.3:** Demonstrate and explain that mixtures of solids can be separated based on observable properties of their parts such as particle size, shape, color, and magnetic attraction.
Investigate Dissolving	Investigate Dissolving Lab Sheet (PDF) Investigate Dissolving Procedure (PDF) **SC.5.N.1.1:** Define a problem, use appropriate reference

	materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. **SC.5.P.8.2:** Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process.
All Sorts of Energy	http://www.cpalms.org/Public/PreviewResource/Preview/46595 This lesson will explore six forms of energy including mechanical, heat, electrical, chemical, sound and nuclear. Through the 5E lesson plan model, students will become engaged in this hands-on lesson. This lesson will take place over 5 days, allowing students an introduction and summary as well as hands-on opportunities to explore the 6 forms of energy. **SC.5.P.10.1:** Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical
Transformation of Energy- Constructing an Electromagnet	http://www.cpalms.org/Public/PreviewResource/Preview/17445 In this hands-on lesson, students will work in groups to construct an electromagnet. This lesson focuses energy, forms of energy, and how energy is transformed in a circuit. This lesson also can be used to address variables in an experiment, conductors and insulators, data tables and graphs, and open and closed circuits. **SC.5.P.10.1:** Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical.

	SC.5.P.10.4: Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.
Transformation of Electrical Energy	http://www.cpalms.org/Public/PreviewResource/Preview/46549 This lesson helps students learn that electrical energy can be transformed into: sound, heat, and light energy. In this lesson, students will participate in a hands-on lab to explore what forms of energy electrical energy will be transformed into. This lesson can be completed in one 60 minute science block. **SC.5.P.10.1:** Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical. **SC.5.P.10.4:** Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.
Blast Off! An Engineering Design Challenge	http://www.cpalms.org/Public/PreviewResource/Preview/32086 This Engineering Design Challenge is intended to help students apply the concepts of forces from SC.5.P.13.1 and SC.5.P.13.2 by building and launching straw rockets. It may also be used as introductory instruction of the content. **SC.5.N.1.1:** Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. **SC.5.P.13.1:** Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling

	objects. **SC.5.P.13.2:** Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object.

Material Lists

Suggested class materials for each student

Class set of Safety Goggles along with disinfecting wipes or sanitizing station
Science Notebooks
Scissors
Construction paper
Colored pencils
Markers
Index cards
Calculators
Rulers

Suggested Measuring Tools to Support Science Education in the Classroom (physical/virtual)

(12) graduated cylinders (plastic)
(12) Tape Measurers
(6) Balance Scales
(12) Beakers (plastic)
(6-12) stopwatches
(6-12) thermometers (should measure both in Celsius and Fahrenheit)

Practice of Science Materials to Support Suggested Labs

(12) Ping Pong Balls
(6) meter/yard sticks
Various surface materials (ex. Carpet squares) *see lab for specifics
(1) Mallet
(2) Different sized xylophone tubes (can be made of PVC) * can substitute 2 glasses of the same size

Earth/Space Science Materials to Support Suggested Labs

(12) 2-liter plastic bottles
(12) cups of pebbles
Large bag of potting soil
(12) 1 gallon resalable plastic bags
Grass seeds (other seeds may be substituted)
(6) large mixing bowls
(6) coffee mugs
(6) small rocks
(6) large spoons
Salt
Plastic wrap
(6) rolls of masking tape
Dixie cups or other drinking cups for each student

Physical Science Materials to Support Suggested Labs

Colored beads
Iron filings
Sand

Pebbles
(6) tubes large enough to hold group materials
(6) magnets
(6) forceps/tweezers
Coffee filters
(6) funnels
(24) baby food jars
(6) tuning forks
(12) D-sized batteries
(1-2) spools of insulated wire
Sand paper
(6) test tubes
Large box of baking soda
Vinegar
(6) flashlights
(6) mirrors
(6) rubber balls
(6) battery holders (D-sized)
(2) Boxes of paperclips
(6) iron nails
Waffle iron
Lamp
Radio
Hair dryer
(6) toy cars
Drinking straws (enough for every student)
(6) tape measures
(2) packages of 9oz clear plastic cups
Salt
(6) teaspoons
Vegetable oil
(6) stopwatches

(6) plastic spoons
(6) thermometers
(6) graduated cylinders