Curriculum Map: Science 4 - Collaboration (Converted)

Course: Science 4*

Unit: Electricity - Circuits

Description:

What are the two types of electricity?
What is static electricity and list some examples of it.
What is current electricity and list some examples of it.
What is a series cicuit and draw examples.
What is a parallel circuit and draw examples.
What are insulators and conductors?
Explain how a switch works.
Build an electricity game to culminate the circuit unit.

Skills:

Build a closed circuit and light a light bulb using a battery, wires, and a light.
Build a series circuit and explain pros and cons of it.
Build a parallel circuit and explain pros and cons of it.
Test items of different materials and see if they are insulators or conductors.
Build a working switch out of a paper clip, brads, and a piece of cardboard.

Will construct the manilla folder game board using a template.
Will fold ten pieces of aluminum foil to 3/8 inch wide.
Will wire the game board using their aluminum foil wire and masking tape.
Will strip two pieces of wire and a Christmas tree light to use in their game.
Will constuct the rest of their game board.

Benchmark Assessments:

Other Visual Assessments
The students will have to construct a working series circuit and a working parallel circuit. They will also have to answer questions concerning both of them.The students will follow a schematic and tell what type of circuit it is.The student will describe insulators and conductors.The students will have a completed, working electricity game to play.

Instructional Procedures:

Providing Practice
Use lights, light holders, wires, and batteries to build the types of circuits. Also, using the circuits, test for insulators and conductors.
Providing Practice
1. Provide practice - teach & model the components of the skill
2. Provide skill refinement e.g. walk & talk through examples in depth
4. Use focused practice on each part of the skill
Introducing New Content & Vocabulary
Introducing New Content & Vocabulary
1. Use KWL, cues & other strategies so students recall important prior knowledge
2. Use higher level questions so students recall important prior knowledge
3. Use advance graphic organizers to show structure of the unit
5. Use various strategies to teach vocabulary - provide example, students stick draw & act word
Using Classroom Organisation
Using Classroom Organisation
5. Use 'hands on' laboratory activities
1. Provide whole class direct instruction
2. Provide instruction to groups
4. Use simulation to extend student understanding
6. Use problem-based situations

Resources:

Textbook, internet, batteries, lights, wires, battery clips

STANDARDS

STATE: Pennsylvania State Anchors

S4.A.2.1.3 (Introduced)	Observe a natural phenomenon (e.g., weather changes, length of daylight/night, movement of shadows, animal migrations, growth of plants), record observations, and then make a prediction based on those observations.
S4.A.2.1.4 (Introduced)	State a conclusion that is consistent with the information/data.
S4.A.3.2.2 (Introduced)	Use models to make observations to explain how systems work (e.g., water cycle, sun-Earth-moon system).
S4.C.1.1.1 (Introduced)	Use physical properties (e.g., mass, shape, size, volume, color, texture, magnetic property, state (i.e., solid, liquid, gas), conductivity (i.e., electrical, heat) to describe matter.
S4.C.1.1.2 (Introduced)	Categorize/group objects using physical characteristics.
S4.C.2.1.2 (Introduced)	Describe the flow of energy through an object or system (e.g., feeling radiant heat from a light bulb, eating food to get energy, using a battery to light a bulb or run a fan).
S4.C.2.1.3 (Introduced)	Recognize or illustrate simple direct current series and parallel circuits composed of batteries, light bulbs (or other common loads), wire, and on/off- switches.

This Curriculum Map Unit has no Topics to display

Unit: Magnets and Magnetism

Description:
What are magnets? What is magnetic?
Examples and nonexamples.
Electricity and magnetism; how each can produce the other
Build an electromagnet.
Use a hand crank generator to produce electricity, (to light a light bulb)
See a magnetic field using iron filings and magnets.

Skills:
Will be able to test for magnetism.
Will build an electromagnet.
Will test their electromagnet's strength by changing the number of coils.
Will explain how magnets can make electricity, and vice versa.
Will explain how motion can make electricity, and vice versa.
Will draw a magnetic field using a magnetic screen and iron filings.

Benchmark Assessments:
Lab Assignment
Will accurately categorize magnetic and nonmagnetic things
Other written assessments
Will be able to explain how electricity can make a magnet and a magnet can make electricity.Will be able to draw a magnetic field with 80% accuracy.
Written Test

Instructional Procedures:
Providing Practice
Will sprinkle iron filling on a magnetic screen to see the magnetic field. They will draw what they see in their notebooks.
Generating & Testing Hypotheses
3. Use in scientific experiments.
Providing Practice
Introducing New Content & Vocabulary
Introducing New Content & Vocabulary
1. Use KWL, cues & other strategies so students recall important prior knowledge
3. Use advance graphic organizers to show structure of the unit
4. Use drama and personal stories to introduce learning goals
5. Use various strategies to teach vocabulary - provide example, students stick draw & act word
Using Classroom Organisation
Using Classroom Organisation
5. Use 'hands on' laboratory activities
1. Provide whole class direct instruction
2. Provide instruction to groups
4. Use simulation to extend student understanding

Resources: Textbook, internet, magnets, generator, Faraday light

STANDARDS

STATE: Pennsylvania State Anchors

S4.C.2.1.2 (Introduced)	Describe the flow of energy through an object or system (e.g., feeling radiant heat from a light bulb, eating food to get energy, using a battery to light a bulb or run a fan).
S4.C.2.1.3 (Introduced)	Recognize or illustrate simple direct current series and parallel circuits composed of batteries, light bulbs (or other common loads), wire, and on/off- switches.
S4.C.3.1.1 (Introduced)	Describe changes in motion caused by forces (e.g., magnetic, pushes or pulls, gravity, friction).

This Curriculum Map Unit has no Topics to display

Unit: Forces and Motion

Description:
Will explain velocity and acceleration.
Will distinguish between velocity and acceleration.
Will explain what inertia is and what affects inertia.

Skills:
Will determine our speed in yards per second and then covert that to miles per hour.
Will demonstrate acceleration by either speeding up, slowing down, or changing direction.
Will experience inertia by pushing a loaded grocery cart in the parking lot.

Benchmark Assessments:
Written Test
Other (describe in detail)
Calculate speed when given a distance and a time.

Instructional Procedures:
Providing Practice
Will run a 50 yard dash to calculate their speed.Will calculate various speed using calculators in a teacher led demonstration.Will use a grocery store cart to experience inertia. (hard to stop it and turn it if a lot of weight is in it)

Providing Practice
Providing Practice
1. Provide practice - teach & model the components of the skill
2. Provide skill refinement e.g. walk & talk through examples in depth
4. Use focused practice on each part of the skill
Introducing New Content & Vocabulary
Introducing New Content & Vocabulary
1. Use KWL, cues & other strategies so students recall important prior knowledge
2. Use higher level questions so students recall important prior knowledge
3. Use advance graphic organizers to show structure of the unit
4. Use drama and personal stories to introduce learning goals
5. Use various strategies to teach vocabulary - provide example, students stick draw & act word
Using Classroom Organisation
Using Classroom Organisation
5. Use 'hands on' laboratory activities
1. Provide whole class direct instruction
4. Use simulation to extend student understanding

Resources: Textbook, internet, D'onofrio's (for the cart), Aldi's for the water softener salt (the load in the cart)

STANDARDS

STATE: Pennsylvania State Anchors

S4.C.3.1.1 (Introduced)	Describe changes in motion caused by forces (e.g., magnetic, pushes or pulls, gravity, friction).
S4.C.3.1.2 (Introduced)	Compare the relative movement of objects or describe types of motion that are evident (e.g., bouncing ball, moving in a straight line, back and forth, merry-go-round).
S4.C.3.1.3 (Introduced)	Describe the position of an object by locating it relative to another object or the background (e.g., geographic direction, left, up).

This Curriculum Map Unit has no Topics to display

Unit: Water Observation- Science It's Elementary

Description: Water has several observable properties, including transparency, shapelessness, and movement or flow.
Water is absorbed by some materials.
Water beads up on some materials.
Surface tension makes a drop of water form beads and domes with a skinlike surface.
Drops of water form domes on pennies because of surface tension.
Surface tension can be disrupted by the addition of some other substances.
The speed at which a bead of water flows on a smooth surface depends on the slope of the surface and the size of the water bead.
Water flows downhill.

Skills: Students will conduct investigations to observe the properties of water.
The students will compare how water interacts with paper towels, waxed paper, aluminum foil, and photocopy paper.
The students will investigate the property of water surface tension.
The students will investigate and observe the movement of water on a slope.
The students will use scientific thinking processes to conduct investigations and build explanations. (observing, communicating, comparing, and organizing)

Benchmark Assessments: Other Visual Assessments
Lab Assignment
Written Test
Other written assessments

Instructional Procedures: Generating & Testing Hypotheses
Generating & Testing Hypotheses
1. Use in problem-solving tasks.
2. Use in investigative tasks.
3. Use in scientific experiments.
Using Classroom Organisation
Using Classroom Organisation
5. Use 'hands on' laboratory activities
1. Provide whole class direct instruction
2. Provide instruction to groups
4. Use simulation to extend student understanding

Resources: SIE Module - Water

STANDARDS

STATE: Pennsylvania State Anchors

S4.A.1.3.1 (Introduced)	Observe and record change by using time and measurement.
S4.A.1.3.3 (Introduced)	Observe and describe the change to objects caused by heat, cold, or light.

S4.A.2.1.4 (Introduced)	State a conclusion that is consistent with the information/data.
S4.A.2.2.1 (Introduced)	Identify appropriate tools or instruments for specific tasks and describe the information they can provide (e.g., measuring: length-ruler, mass-balance scale, volume-beaker, temperature-thermometer; making observations: hand lens, binoculars, telescope).
S4.A.3.2.1 (Introduced)	Identify what different models represent (e.g., maps show physical features, directions, distances; globes represent Earth; drawings of watersheds depict terrain; dioramas show ecosystems; concept maps show relationships of ideas).
S4.A.3.2.2 (Introduced)	Use models to make observations to explain how systems work (e.g., water cycle, sun-Earth-moon system).
S4.A.3.3.1 (Introduced)	Identify and describe observable patterns (e.g., growth patterns in plants, weather, water cycle).
S4.B.3.3.5 (Introduced)	Describe the effects of pollution (e.g., litter) in the community.
S4.C.1.1.1 (Introduced)	Use physical properties (e.g., mass, shape, size, volume, color, texture, magnetic property, state (i.e., solid, liquid, gas), conductivity (i.e., electrical, heat) to describe matter.
S4.D.1.1.2 (Introduced)	Identify various Earth structures (e.g., mountain, watershed, peninsula, lake, river, valley) through the use of models.
S4.D.1.2.2 (Introduced)	Identify the types and uses of Earth materials for renewable, nonrenewable, and reusable products (e.g., human-made products: concrete, paper, plastics, metal, fabrics, buildings, highways).
S4.D.1.2.3 (Introduced)	Recognize ways that humans benefit from the use of water resources (e.g., agriculture, energy, recreation).
S4.D.1.3.1 (Introduced)	Describe types of freshwater and saltwater bodies (e.g., lakes, rivers, wetlands, oceans).
S4.D.1.3.2 (Introduced)	Explain how water goes through phase changes (i.e., evaporation, condensation, freezing, melting).
S4.D.1.3.3 (Introduced)	Describe or compare lentic systems (i.e., ponds, lakes, bays) and lotic systems (i.e., streams, creeks, rivers).
S4.D.1.3.4 (Introduced)	Explain the role and relationship of a watershed or a wetland on water sources (e.g., water storage, groundwater recharge, water filtration, water source, water cycle).

This Curriculum Map Unit has no Topics to display

Unit: Hot Water, Cold Water - Science It's Elementary

Description:
Water may exist as a solid, liquid, or gas, depending on its temperature.
Changing the temperature of water may change its properties.
Water expands when heat is added.
Water contracts when heat is taken away.
Cold water is denser than room-temperature water.
Cold water is denser than warm water.
Warm water is less dense than room-temperature water.
A material that floats in water is less dense than the water; a material that sinks is denser.
Ice is less dense than liquid water.
Liquid water becomes solid water (ice) when it cools to zero degrees Celsius.
Warming ice to a temperature above zero degrees Celsius causes it to melt into liquid water.
A solid has definite volume and shape; a liquid has only definite volume.

Skills:
The students will construct a thermometer to observe that water expands as it warms and contracts as it cools.
The students will observe and describe the interaction between two masses of water at different temperatures.
The students will compare properties of two states of water: solid (ice) and liquid.
The students will use scientific thinking processes to conduct investigations and build explanations. (observing, communicating, comparing, and organizing)

Benchmark Assessments:
Written Test
Lab Assignment
Written Test

Instructional Procedures:
Introducing New Content & Vocabulary
Generating & Testing Hypotheses
1. Use in problem-solving tasks.
2. Use in investigative tasks.
3. Use in scientific experiments.
Using Classroom Organisation
Using Classroom Organisation
5. Use 'hands on' laboratory activities
1. Provide whole class direct instruction
2. Provide instruction to groups
4. Use simulation to extend student understanding

Resources:
SIE Module - Water

STANDARDS

STATE: Pennsylvania State Standards

3.2.4.B1 (Introduced)		Describe objects in the world using the five senses.	
	S4.A.3.3	Pennsylvania Science Anchors to Standards Alignment	Identify and make observations about patterns that regularly occur and reoccur in nature.
	S4.C.1.1	Pennsylvania Science Anchors to Standards Alignment	Describe observable physical properties of matter.
	S4.C.3.1	Pennsylvania Science Anchors to Standards Alignment	Identify and describe different types of force and motion, or the effect of the interaction between force and motion.
	S4.D.2.1	Pennsylvania Science Anchors to Standards Alignment	Identify basic weather conditions and how they are measured.
3.1.4.B (Introduced)		Know models as useful simplifications of objects or processes.	
	S4.A.3.2	Pennsylvania Science Anchors to Standards Alignment	Use models to illustrate simple concepts and compare the models to what it represent.
3.1.4.D (Introduced)		Know that scale is an important attribute of natural and human made objects, events and phenomena.	
3.2.4.C (Introduced)		Recognize and use the elements of scientific inquiry to solve problems.	
	S4.A.1.1	Pennsylvania Science Anchors to Standards Alignment	Identify and explain the pros and cons of applying scientific, environmental, or technological knowledge to possible solutions to problems.
	S4.A.2.1	Pennsylvania Science Anchors to Standards Alignment	Apply skills necessary to conduct an experiment or design a solution to solve a problem.
3.5.4.A (Introduced)		Know basic landforms and earth history.	
	S4.D.1.1	Pennsylvania Science Anchors to Standards Alignment	Describe basic landforms in Pennsylvania.
3.5.4.D (Introduced)		Recognize the earth's different water resources.	
	S4.D.1.2	Pennsylvania Science Anchors to Standards Alignment	Identify the types and uses of Earth's resources.

This Curriculum Map Unit has no Topics to display

Unit: Water Cycle

Description:
List the three steps in the water cycle.
List the four forms of precipitation.
Classify major storms. (tornado, hurricane, blizzard)
List three ways in which heat moves. (conduction, convection, radiation)
Explain sea breeze and land breeze.
Reading a weather map.
Explain how cold and warm fronts affect weather.

Skills:
Draw an accurate poster depicting the water cycle.
Explain what factors are needed for the different types of precipitation to fall.
Act out sea breeze and land breeze.
Read a weather map and explain what is going to happen.

Benchmark Assessments:
Lab Assignment
Will be assessed on accuracy of their water cycle poster. Teacher made test. Vocabulary and content quizzes.

Instructional Procedures:
Providing Practice
Providing Practice
1. Provide practice - teach & model the components of the skill
2. Provide skill refinement e.g. walk & talk through examples in depth

Resources:
Science book, internet

STANDARDS

STATE: Pennsylvania State Anchors

S4.C.1.1.1 (Introduced)	Use physical properties (e.g., mass, shape, size, volume, color, texture, magnetic property, state (i.e., solid, liquid, gas), conductivity (i.e., electrical, heat) to describe matter.
S4.C.1.1.2 (Introduced)	Categorize/group objects using physical characteristics.
S4.D.1.1.1 (Introduced)	Describe how prominent Earth features in Pennsylvania (e.g., mountains, valleys, beaches, caves, sinkholes, lakes, rivers) were formed.
S4.D.1.1.2 (Introduced)	Identify various Earth structures (e.g., mountain, watershed, peninsula, lake, river, valley) through the use of models.
S4.D.1.3.1 (Introduced)	Describe types of freshwater and saltwater bodies (e.g., lakes, rivers, wetlands, oceans).
S4.D.1.3.2 (Introduced)	Explain how water goes through phase changes (i.e., evaporation, condensation, freezing, melting).

S4.D.1.3.3 (Introduced)	Describe or compare lentic systems (i.e., ponds, lakes, bays) and lotic systems (i.e., streams, creeks, rivers).
S4.D.1.3.4 (Introduced)	Explain the role and relationship of a watershed or a wetland on water sources (e.g., water storage, groundwater recharge, water filtration, water source, water cycle).
S4.D.2.1.1 (Introduced)	Identify basic clouds types (i.e., cirrus, cumulus, stratus, cumulonimbus) and make connections to basic elements of weather (e.g., changes in temperature and precipitation).
S4.D.2.1.2 (Introduced)	Identify weather patterns from data charts or graphs of the data (e.g., temperature, wind direction, wind speed, cloud types, precipitation).
S4.D.2.1.3 (Introduced)	Identify appropriate instruments (i.e., thermometer, rain gauge, weather vane, anemometer, barometer to study weather and what they measure.

This Curriculum Map Unit has no Topics to display

Unit: Waterworks - Science It's Elementary

Description:
Some earth materials absorb more water than other earth materials do.
Water flows more easily through some earth materials than through others.
Flowing water can be used to do work.
Waterwheels are a kind of machine powered by flowing water.
Water contains different materials that affect its quality.
Evaporation can be used to detect materials that may be dissolved in water.

Skills:
The students will investigate what happens when water is poured through two earth materials, soil and gravel.
The students will construct a waterwheel and use it to lift objects.
The students will compare the properties of local water samples.
The students will use scientific thinking processes to conduct investigations and build explanations. (observing, communicating, comparing, and organizing)

Benchmark Assessments:
Lab Assignment
Other oral assessments
Written Test

Instructional Procedures:
Introducing New Content & Vocabulary
Generating & Testing Hypotheses
3. Use in scientific experiments.
Using Cooperative Learning & Active Engagement
1. Use peer learning
2. Use cooperative groups
3. Use active learning strategies e.g. peer share, thumbs up/down, whip around the class

Resources:
SIE Module - Water

STANDARDS

STATE: Pennsylvania State Standards

3.2.4.B1 (Introduced)		Describe objects in the world using the five senses.	
	S4.A.3.3	Pennsylvania Science Anchors to Standards Alignment	Identify and make observations about patterns that regularly occur and reoccur in nature.
	S4.C.1.1	Pennsylvania Science Anchors to Standards Alignment	Describe observable physical properties of matter.
	S4.C.3.1	Pennsylvania Science Anchors to Standards Alignment	Identify and describe different types of force and motion, or the effect of the interaction between force and motion.
	S4.D.2.1	Pennsylvania Science Anchors to Standards Alignment	Identify basic weather conditions and how they are measured.
3.1.4.B (Introduced)		Know models as useful simplifications of objects or processes.	
	S4.A.3.2	Pennsylvania Science Anchors to Standards Alignment	Use models to illustrate simple concepts and compare the models to what it represent.
3.2.4.D (Introduced)		Recognize and use the technological design process to solve problems.	
3.5.4.A (Introduced)		Know basic landforms and earth history.	
	S4.D.1.1	Pennsylvania Science Anchors to Standards Alignment	Describe basic landforms in Pennsylvania.
3.5.4.B (Introduced)		Know types and uses of earth materials.	
	S4.D.1.2	Pennsylvania Science Anchors to Standards Alignment	Identify the types and uses of Earth's resources.

This Curriculum Map Unit has no Topics to display

Unit: Water Vapor - Science It's Elementary

Description: Evaporation is the process by which liquid water changes into water vapor, a gas.
Temperature affects the rate of evaporation.
The surface area of a liquid affects the rate of evaporation.
Condensation occurs when water vapor contacts a cool surface and changed it into a liquid.
Evaporation and condensation contribute to the movement of water through the water cycle.

Skills: The students will investigate the effect of surface area and air temperature on evaporation.
The students will observe condensation.
The students will investigate the effect of temperature on condensation.
The students will use scientific thinking processes to conduct investigations and build explanations. (observing, communicating, comparing, and organizing)

Benchmark Assessments: Other written assessments
Other Visual Assessments
Written Test

Instructional Procedures: Generating & Testing Hypotheses
Generating & Testing Hypotheses
1. Use in problem-solving tasks.
2. Use in investigative tasks.
3. Use in scientific experiments.

Resources: SIE module - Water

STANDARDS

STATE: Pennsylvania State Standards

3.2.4.B1 (Introduced)	Describe objects in the world using the five senses.		
	S4.A.3.3	Pennsylvania Science Anchors to Standards Alignment	Identify and make observations about patterns that regularly occur and reoccur in nature.
	S4.C.1.1	Pennsylvania Science Anchors to Standards Alignment	Describe observable physical properties of matter.
	S4.C.3.1	Pennsylvania Science Anchors to Standards Alignment	Identify and describe different types of force and motion, or the effect of the interaction between force and motion.
	S4.D.2.1	Pennsylvania Science Anchors to Standards Alignment	Identify basic weather conditions and how they are measured.
3.1.4.A (Introduced)	Know that natural and human-made objects are made up of parts.		
	S4.A.3.1	Pennsylvania Science Anchors to Standards Alignment	Identify systems and describe relationships among parts of a familiar system (e.g., digestive system, simple machines, water cycle).
3.2.4.A (Introduced)	Identify and use the nature of scientific and technological knowledge.		
	S4.A.1.1	Pennsylvania Science Anchors to Standards Alignment	Identify and explain the pros and cons of applying scientific, environmental, or technological knowledge to possible solutions to problems.
3.2.4.C (Introduced)	Recognize and use the elements of scientific inquiry to solve problems.		
	S4.A.1.1	Pennsylvania Science Anchors to Standards Alignment	Identify and explain the pros and cons of applying scientific, environmental, or technological knowledge to possible solutions to problems.
	S4.A.2.1	Pennsylvania Science Anchors to Standards Alignment	Apply skills necessary to conduct an experiment or design a solution to solve a problem.
3.4.4.A (Introduced)	Recognize basic concepts about the structure and properties of matter.		
	S4.C.1.1	Pennsylvania Science Anchors to Standards Alignment	Describe observable physical properties of matter.
3.5.4.B (Introduced)	Know types and uses of earth materials.		
	S4.D.1.2	Pennsylvania Science Anchors to Standards Alignment	Identify the types and uses of Earth's resources.
3.5.4.D (Introduced)	Recognize the earth's different water resources.		
	S4.D.1.2	Pennsylvania Science Anchors to Standards Alignment	Identify the types and uses of Earth's resources.

This Curriculum Map Unit has no Topics to display

Unit: Simple Machines

Description: Know scientific definition of work. (a force moving something in the direction you want it to go)
Know what machines do for us. (changes the way work is done, changes direction of the force, changes effort)

Identify the four parts of a lever. (bar, fulcrum, load (weight force), and your force)
Classify objects into what type of lever they are. (Class I, II, or III) (it depends on where the fulcrum is located)
Explain how an inclined plane makes work easier.
Explain the steepness of the inclined plane in a screw or on a wedge changes the effort.
Classify objects into what type of simple machine they are.

Skills: Will model and act out all types of levers.
Will demonstrate how various simple machines work and why the change the direction or the effort of the force.

Benchmark Assessments: Other Visual Assessments
Demonstrate how the three types of levers difer.Explain how simple machines work.Explain how the steepness of an inclined plane affects the effort and distance traveled.
Written Test
Teacher made test

Instructional Procedures: Providing Practice
Practice using the three types of levers.Practice using all types of simple machines.
Making Comparisons & Contrasts
1. Use similarities & differences with teacher-generated criteria.
3. Use classification to extend student understanding
Providing Practice
1. Provide practice - teach & model the components of the skill
2. Provide skill refinement e.g. walk & talk through examples in depth
3. Use skill refinement & point out possible common mistakes to avoid
4. Use focused practice on each part of the skill
5. Provide practice so that the skills become automatic and fluent (up to 24 times)
Introducing New Content & Vocabulary
Introducing New Content & Vocabulary
1. Use KWL, cues & other strategies so students recall important prior knowledge
3. Use advance graphic organizers to show structure of the unit
4. Use drama and personal stories to introduce learning goals
5. Use various strategies to teach vocabulary - provide example, students stick draw & act word
Using Classroom Organisation
Using Classroom Organisation
5. Use 'hands on' laboratory activities
1. Provide whole class direct instruction
2. Provide instruction to groups
4. Use simulation to extend student understanding
6. Use problem-based situations

Resources: Simple machines from the science lab, internet, textbook

STANDARDS

STATE: Pennsylvania State Anchors

S4.A.2.2.1 (Introduced)	Identify appropriate tools or instruments for specific tasks and describe the information they can provide (e.g., measuring: length-ruler, mass-balance scale, volume-beaker, temperature-thermometer; making observations: hand lens, binoculars, telescope).
S4.A.3.2.1 (Introduced)	Identify what different models represent (e.g., maps show physical features, directions, distances; globes represent Earth; drawings of watersheds depict terrain; dioramas show ecosystems; concept maps show relationships of ideas).
S4.A.3.2.3 (Introduced)	Use appropriate, simple modeling tools and techniques to describe or illustrate a system (e.g., two cans and string to model a communications system, terrarium to model an ecosystem).
S4.C.1.1.2 (Introduced)	Categorize/group objects using physical characteristics.
S4.C.3.1.1 (Introduced)	Describe changes in motion caused by forces (e.g., magnetic, pushes or pulls, gravity, friction).

This Curriculum Map Unit has no Topics to display

Unit: Moon - Earth - Sun

Description: Compare the size of the moon to the Earth. (Earth is four times larger than the moon)
Compare the size of the Earth to the sun. (The sun is 109 times larger than the Earth)
Describe the tilt of the Earth at 23.5 degrees causes our seasons.
Describe the tilt of the Earth at 23.5 degrees causes five lines of latitude.
List the Arctic Circle, Tropic of Cancer, Equator, Tropic of Capricorn, and Antarctic Circle as the five lines of latitude.
Describe how the phases of the moon occur.
Draw 16 phases of the moon by using the "Blue Earth" model as the moon.
Measure to scale the distance away from the sun the nine planets are.
Measure and draw to scale all nine planets to each other.

Skills:
Measure the circumference of Earth (our globe) and find a sphere that would represent the moon to scale.
Measure the circumference of Earth (our globe) and measure a circumference representing the sun to scale.
Act out how the tilt of the Earth causes the seasons.
Act out how the tilt of the Earth causes the five lines of latitude.
Draw what the phases of the moon look like, using a lighted sphere as a guide.
Measure to scale the distance the planets are from the sun.
Measure and draw to scale the nine planets.

Benchmark Assessments:
Other Visual Assessments
Draw to scale the moon to Earth diagram.Draw to scale the Earth to sun diagram.Draw to scale the eight planets.Measure to scale the distance from the sun the planets are.Draw the phases of the moon
Written Test

Instructional Procedures:
Providing Practice
Model distances to scale.Model planet sizes to scale.
Providing Feedback
1. Provide corrective feedback & identify areas of strength & improvement for the student
2. Provide feedback that is specific to the criterion on the rubric
3. Use peer or self assessment so students provide feedback to each other
Making Comparisons & Contrasts
Introducing New Content & Vocabulary
1. Use KWL, cues & other strategies so students recall important prior knowledge
2. Use higher level questions so students recall important prior knowledge
3. Use advance graphic organizers to show structure of the unit
4. Use drama and personal stories to introduce learning goals
5. Use various strategies to teach vocabulary - provide example, students stick draw & act word
Making Comparisons & Contrasts
1. Use similarities & differences with teacher-generated criteria.
2. Use similarities & differererences with student-generated criteria.
Using Classroom Organisation
Using Classroom Organisation
5. Use 'hands on' laboratory activities
1. Provide whole class direct instruction
2. Provide instruction to groups
4. Use simulation to extend student understanding

Resources:
internet, other astronomy books, textbook

STANDARDS

STATE: Pennsylvania State Anchors

S4.A.1.3.1 (Introduced)	Observe and record change by using time and measurement.
S4.A.1.3.2 (Introduced)	Describe relative size, distance, or motion.
S4.A.2.1.3 (Introduced)	Observe a natural phenomenon (e.g., weather changes, length of daylight/night, movement of shadows, animal migrations, growth of plants), record observations, and then make a prediction based on those observations.
S4.A.2.2.1 (Introduced)	Identify appropriate tools or instruments for specific tasks and describe the information they can provide (e.g., measuring: length-ruler, mass-balance scale, volume-beaker, temperature-thermometer; making observations: hand lens, binoculars, telescope).
S4.A.3.2.1 (Introduced)	Identify what different models represent (e.g., maps show physical features, directions, distances; globes represent Earth; drawings of watersheds depict terrain; dioramas show ecosystems; concept maps show relationships of ideas).
S4.A.3.2.2 (Introduced)	Use models to make observations to explain how systems work (e.g., water cycle, sun-Earth-moon system).
S4.A.3.3.1 (Introduced)	Identify and describe observable patterns (e.g., growth patterns in plants, weather, water cycle).
S4.A.3.3.2 (Introduced)	Predict future conditions/events based on observable patterns (e.g., day/night, seasons, sunrise/sunset, lunar phases).
S4.C.3.1.1 (Introduced)	Describe changes in motion caused by forces (e.g., magnetic, pushes or pulls, gravity, friction).
S4.C.3.1.3 (Introduced)	Describe the position of an object by locating it relative to another object or the background (e.g., geographic direction, left, up).
S4.D.3.1.1 (Introduced)	Describe motions of the sun-Earth-moon system.
S4.D.3.1.2 (Introduced)	Explain how the motion of the sun, earth, moon system relates to time (e.g., days, months, years).
S4.D.3.1.3 (Introduced)	Describe the causes of seasonal change as it relates to the rotation of the Earth and the tilt of the Earth's axis.

This Curriculum Map Unit has no Topics to display

Unit: Rock Cycle

Description:
Will not get to this unit because of the second Science...It's Elementary kits.
Will list the three types of rocks and explain how each are formed.
Will explain the rock cycle.
Will explain the weathering of rocks.
Will explain how erosion affects rocks.
Will describe what soil is.
Will explain how soil forms and how it differs from other soil.

Skills:
Will make a sedimentary rock out of colored sand and watery glue.
Will make a sedimentary rock out of different colored clay.
Will weather rocks using physical weathering.

Benchmark Assessments:
Other Visual Assessments
Accurate model of the rock cycle.
Other written assessments
Explain the rock cycle.
Written Test

Instructional Procedures:
Making Comparisons & Contrasts
Introducing New Content & Vocabulary
1. Use KWL, cues & other strategies so students recall important prior knowledge
2. Use higher level questions so students recall important prior knowledge
3. Use advance graphic organizers to show structure of the unit
5. Use various strategies to teach vocabulary - provide example, students stick draw & act word
Making Comparisons & Contrasts
1. Use similarities & differences with teacher-generated criteria.
3. Use classification to extend student understanding
Providing Practice
1. Provide practice - teach & model the components of the skill
2. Provide skill refinement e.g. walk & talk through examples in depth
4. Use focused practice on each part of the skill
5. Provide practice so that the skills become automatic and fluent (up to 24 times)
Using Classroom Organisation
Using Classroom Organisation
5. Use 'hands on' laboratory activities
1. Provide whole class direct instruction
2. Provide instruction to groups
4. Use simulation to extend student understanding

Resources:
Textbook, internet, Mother Nature

STANDARDS

STATE: Pennsylvania State Anchors

S4.A.1.3.3 (Introduced)	Observe and describe the change to objects caused by heat, cold, or light.
S4.A.2.2.1 (Introduced)	Identify appropriate tools or instruments for specific tasks and describe the information they can provide (e.g., measuring: length-ruler, mass-balance scale, volume-beaker, temperature-thermometer; making observations: hand lens, binoculars, telescope).
S4.A.3.2.1 (Introduced)	Identify what different models represent (e.g., maps show physical features, directions, distances; globes represent Earth; drawings of watersheds depict terrain; dioramas show ecosystems; concept maps show relationships of ideas).
S4.A.3.2.2 (Introduced)	Use models to make observations to explain how systems work (e.g., water cycle, sun-Earth-moon system).

This Curriculum Map Unit has no Topics to display

Unit: Plate Tectonics - Earth Science

Description:
Will not get to this unit because of the second Science...It's Elementary kits.
Will identify major landforms.
Will explain how landforms develop.
Will identify forces that change Earth's surface. (earthquakes, volcanoes, glaciers, rivers)
Will identify the layers of Earth.
Will identify Pangaea and list the major plates of the Earth.
Will create a fossil in plaster of Paris.

Skills:
Will compare and contrast major landforms. (valleys and canyons, mountains and hills, lakes and oceans, plateaus, mesas, and buttes)
Will explain what causes earthquakes and volcanoes.
Will explain the effects of erosion on the different landforms.
Will identify how glaciers, rivers, and wind cause erosion.

Will explain how fossils are made on the earth.

Benchmark Assessments:
Lab Assignment
Complete a puzzle of Pangaea
Other Visual Assessments
Explain how their fossil was made.Explain how their sedimentary rock was formed.

Instructional Procedures:
Using Classroom Organisation
Introducing New Content & Vocabulary
1. Use KWL, cues & other strategies so students recall important prior knowledge
3. Use advance graphic organizers to show structure of the unit
4. Use drama and personal stories to introduce learning goals
5. Use various strategies to teach vocabulary - provide example, students stick draw & act word
Making Comparisons & Contrasts
1. Use similarities & differences with teacher-generated criteria.
2. Use similarities & differerences with student-generated criteria.
3. Use classification to extend student understanding
Using Classroom Organisation
5. Use 'hands on' laboratory activities
1. Provide whole class direct instruction
3. Provide instruction to individuals
4. Use simulation to extend student understanding

Resources: Textbook, internet

STANDARDS

STATE: Pennsylvania State Anchors

S4.A.3.2.1 (Introduced)	Identify what different models represent (e.g., maps show physical features, directions, distances; globes represent Earth; drawings of watersheds depict terrain; dioramas show ecosystems; concept maps show relationships of ideas).
S4.A.3.2.2 (Introduced)	Use models to make observations to explain how systems work (e.g., water cycle, sun-Earth-moon system).
S4.A.3.2.3 (Introduced)	Use appropriate, simple modeling tools and techniques to describe or illustrate a system (e.g., two cans and string to model a communications system, terrarium to model an ecosystem).
S4.A.3.3.2 (Introduced)	Predict future conditions/events based on observable patterns (e.g., day/night, seasons, sunrise/sunset, lunar phases).
S4.C.3.1.1 (Introduced)	Describe changes in motion caused by forces (e.g., magnetic, pushes or pulls, gravity, friction).

This Curriculum Map Unit has no Topics to display

Unit: Human Body - Bones - Science It's Elementary

Description:
A human body can move in many ways. Movements are aided and limited by bone and joint structure.
Bones have a variety of forms.
Bones have three major functions in the human body: support, protection, and locomotion,

Skills:
The students will observe the movement of the body in the act of jumping.
The students will locate some of the major bones in their bodies.
The students will compare their own skeletons to posters and a photo of the human skeleton.
The students will determine the number of bones in the human skeleton.
The students will learn the name, location, and orientation of the most important bones in the human skeleton.
The students will use scientific thinking processes to conduct investigations and build explanations. (observing, communicating, comparing, and organizing)

Benchmark Assessments:
Written Test
Other Visual Assessments
Lab Assignment
Other written assessments

Instructional Procedures:
Using Cooperative Learning & Active Engagement
Generating & Testing Hypotheses
1. Use in problem-solving tasks.
2. Use in investigative tasks.
3. Use in scientific experiments.
Making Comparisons & Contrasts
1. Use similarities & differences with teacher-generated criteria.
2. Use similarities & differerences with student-generated criteria.
3. Use classification to extend student understanding
Using Classroom Organisation
5. Use 'hands on' laboratory activities
1. Provide whole class direct instruction
2. Provide instruction to groups

4. Use simulation to extend student understanding
6. Use problem-based situations
Using Cooperative Learning & Active Engagement
1. Use peer learning
2. Use cooperative groups
3. Use active learning strategies e.g. peer share, thumbs up/down, whip around the class
4. Give students explicit instruction on working cooperatively
Using Reading Strategies
1. Use paired or cooperative reading
2. Students read aloud

Resources: SIE Mudule - Human Body

STANDARDS

STATE: Pennsylvania State Standards

3.2.4.B1 (Introduced)	Describe objects in the world using the five senses.		
	S4.A.3.3	Pennsylvania Science Anchors to Standards Alignment	Identify and make observations about patterns that regularly occur and reoccur in nature.
	S4.C.1.1	Pennsylvania Science Anchors to Standards Alignment	Describe observable physical properties of matter.
	S4.C.3.1	Pennsylvania Science Anchors to Standards Alignment	Identify and describe different types of force and motion, or the effect of the interaction between force and motion.
	S4.D.2.1	Pennsylvania Science Anchors to Standards Alignment	Identify basic weather conditions and how they are measured.
3.1.4.A (Introduced)	Know that natural and human-made objects are made up of parts.		
	S4.A.3.1	Pennsylvania Science Anchors to Standards Alignment	Identify systems and describe relationships among parts of a familiar system (e.g., digestive system, simple machines, water cycle).
3.1.4.B (Introduced)	Know models as useful simplifications of objects or processes.		
	S4.A.3.2	Pennsylvania Science Anchors to Standards Alignment	Use models to illustrate simple concepts and compare the models to what it represent.
3.1.4.E (Introduced)	Recognize change in natural and physical systems.		
	S4.A.1.3	Pennsylvania Science Anchors to Standards Alignment	Recognize and describe change in natural or human-made systems and the possible effects of those changes.
	S4.B.3.2	Pennsylvania Science Anchors to Standards Alignment	Describe, explain, and predict change in natural or human-made systems and the possible effects of those changes on the environment.
3.2.4.C (Introduced)	Recognize and use the elements of scientific inquiry to solve problems.		
	S4.A.1.1	Pennsylvania Science Anchors to Standards Alignment	Identify and explain the pros and cons of applying scientific, environmental, or technological knowledge to possible solutions to problems.
	S4.A.2.1	Pennsylvania Science Anchors to Standards Alignment	Apply skills necessary to conduct an experiment or design a solution to solve a problem.
3.2.4.D (Introduced)	Recognize and use the technological design process to solve problems.		
3.3.4.A (Introduced)	Know the similarities and differences of living things.		
	S4.B.1.1	Pennsylvania Science Anchors to Standards Alignment	Identify and describe similarities and differences between living things and their life processes.
3.3.4.B (Introduced)	Know that living things are made up of parts that have specific functions.		
	S4.B.1.1	Pennsylvania Science Anchors to Standards Alignment	Identify and describe similarities and differences between living things and their life processes.
3.3.4.C (Introduced)	Know that characteristics are inherited and, thus, offspring closely resemble their parents.		
	S4.B.2.2	Pennsylvania Science Anchors to Standards Alignment	Identify that characteristics are inherited and, thus, offspring closely resemble their parents.
3.4.4.A (Introduced)	Recognize basic concepts about the structure and properties of matter.		
	S4.C.1.1	Pennsylvania Science Anchors to Standards Alignment	Describe observable physical properties of matter.
3.4.4.C (Introduced)	Observe and describe different types of force and motion.		
	S4.C.2.1	Pennsylvania Science Anchors to Standards Alignment	Recognize basic energy types and sources, or describe how energy can be changed from one form to another.
	S4.C.3.1	Pennsylvania Science Anchors to Standards Alignment	Identify and describe different types of force and motion, or the effect of the interaction between force and motion.

This Curriculum Map Unit has no Topics to display

Unit: Human Body - Joints - Science It's Elementary

Description: The human body has an articulated skeleton ready for action.
The structure of a bone is related to its function.

The human skeleton has three types of joints: hinge, ball-and-socket, and gliding joints.

Skills:
The students will observe joints in the human hand.
The students will perform everyday tasks with hand joints immobilzed.
The students will investigate different kinds of joints in the human skeleton.
The students will heighten their awareness of the exquisite design and versatility of the human body.
The students will compare human skeletal joints to analogous mechanical structures.
The students will use scientific thinking processes to conduct investigations and build explanations. (observing, communicating, comparing, and organizing)

Benchmark Assessments:
Other written assessments
Other Visual Assessments
Lab Assignment
Dramatization
Written Test

This Curriculum Map Unit has no Topics to display

Unit: Human Body - Muscles - Science It's Elementary

Description:
The main function of muscles is to provide movement.
Muscle tissue contracts when it works.
Muscles provide coordination and structure for the body.
Muscles attach to bones with tissues called tendons.

Skills:
The students will learn that muscles contract when they work.
The students will build an operating model to demonstrate how muscles and tendons work together to move legs and feet.
The students will build an operating model to demonstrate how muscles, tendons, and ligaments work together to move thumbs.
The students will use scientific thinking processes to conduct investigations and build explanations. (observing, communicating, comparing, and organizing)

Benchmark Assessments:
Lab Assignment
Other oral assessments
Other Visual Assessments
Written Test

This Curriculum Map Unit has no Topics to display

Unit: Human Body - Coordination -Science It's Elementary

Description:
The actions of bones, muscles, and central nervous system working together is called coordination.
A stimulus is an event that triggers a response. It is often information received through the senses.
A response is a reaction to a stimulus.
Response time is the length of time between a stimulus and a response.

Skills:
The students will investigate hand and foot response to visual stimuli.
The students will observe the bones, joints, and muscles that move when the hand and foot respond.
The students will investigate the effect of practice on response time.
The students will investigate response time when the stimulus is nonvisual (auditory or tactile).
The students will use scientific thinking processes to conduct investigations and build explanations. (observing, communicating, comparing, and organizing)

Benchmark Assessments:
Lab Assignment
Other oral assessments
Other Visual Assessments
Other written assessments
Written Test

This Curriculum Map Unit has no Topics to display