Life Science
Worksheet

GRADE LEVEL: Kindergarten

Topic: Organization of Living Things

Grade Level Standard: K-1 Examine living things.

Grade Level Benchmark: 1. Explain characteristics and functions of observable body parts in a variety of animals. (III.2.E.1)

Learning Activity(s)/Facts/Information	**Resources**
Central Question: ***What are the functions of observable body parts of animals?***	
1. Read In the Woods by Ermanno Cristini & Luigi Puricelli. Talk about and point out living/nonliving things. 2. Children cut out pictures of living and nonliving things and make a separate collages. 3. Visit a farm.	In the Woods
Process Skills: Classifying, Observing, Communicating Cla C jkljl;ajdflajdslfajsd;l	

New Vocabulary: fur, scales, feathers, horns, claws, quills, beaks, eyes, teeth, skeleton, muscles, exoskeleton, insulation, support, movement, food gathering, protection

Life Science
Worksheet

GRADE LEVEL: Kindergarten

Topic: Organization of Living Things

Grade Level Standard: K-1 Examine living things.

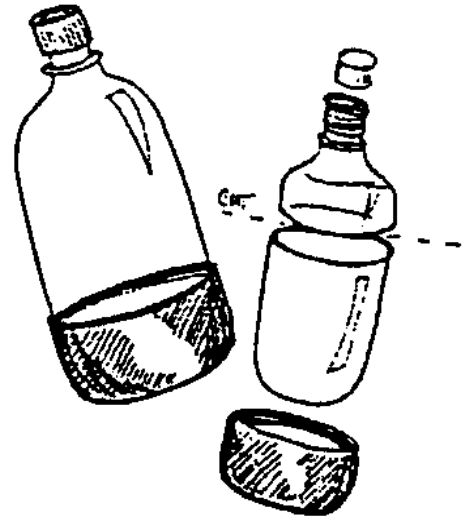
Grade Level Benchmark: 2. Describe life cycles of familiar organisms. (III.2.E.3)

Learning Activity(s)/Facts/Information	**Resources**
Central Question: ***What are the life cycle stages of living things (organisms)?*** 1. Children bring in pictures of pets and talk about how to care for them, how they grow and eventually die. 2. "Make a Terrarium" ★ 3. Buy a fish tank, watch throughout the year. ★Activity is attached	
Process Skills: Observing, Drawing conclusions, Controlling variables, Hypothesizing, Predicting	

New Vocabulary: egg, young, adult, seed, plant, flower, fruit, larva, pupa

Make a Terrarium

You Will Need: Plastic 2 liter bottle
Scissors
Potting Soil
Plant or plant cutting



Do This:

1. Cut the top from the 2 liter bottle with scissors. (Save and use later as a funnel.)
2. Pull the hard plastic bottom free from the bottle. You may need to soak in warm water first.
3. Put pebbles in the bottom of the hard plastic bottom. Add potting soil.
4. Gently place your plant into a small hole in the soil. Cover the roots with soil and add water.
5. Turn the clear plastic upside down into the hard plastic bottom.
6. Watch your plant grow. Make sure it gets plenty of light. Add water if needed.

Life Science
Worksheet

GRADE LEVEL: Kindergarten

Topic: Organization of Living Things

Grade Level Standard: K-1 Examine living things.

Grade Level Benchmark: 3. Explain functions of selected seed plant parts. (III.2.E.5)

Learning Activity(s)/Facts/Information	**Resources**
Central Question: ***How does each part of a seed plant support the plant's life? What are the functions of seed plant parts?*** 1. Read The Tiny Seed by Eric Carle. 2. Draw the parts of a flower as the teacher tells you to, part by part.	The Tiny Seed by Eric Carle
Process Skills: Observing, Drawing conclusions	

New Vocabulary: roots, stems, leaves, flowers, fruits, seeds

Life Science
Worksheet

GRADE LEVEL: Kindergarten

Topic: Ecosystems

Grade Level Standard: K-2 Explain ecosystems.

Grade Level Benchmark: 1. Describe the basic requirements for all living things to maintain their existence. (III.5.E.2)

Learning Activity(s)/Facts/Information	**Resources**
Central Question: ***What does an animal need to survive?*** 1. Grow two plants, give one water and not the other; which one will grow? 2. Have two other plants in the room, give one good sunlight and not the other; which one will grow? 3. Have two more plants in the room, put petroleum jelly on the underside of one plant's leaves. Can it live with out being able to breathe air?	
Process Skills: Controlling variables	

New Vocabulary: Needs of life: food, habitat, water, shelter, air, light, minerals

Physical Science
Worksheet

GRADE LEVEL: Kindergarten

Topic: Matter and Energy

Grade Level Standard: K-3 Classify matter.

Grade Level Benchmark: 1. Classify common objects and substances according to observable attributes/properties. (IV.1.E.1)

Learning Activity(s)/Facts/Information	**Resources**
Central Question: ***How are given objects alike and different?*** 1. Use attribute blocks for sorting. 2. Sort classroom objects such as seashells, buttons, and bottle caps. 3. Identify foods and spices by smell.	Attribute blocks
Process Skills: Classifying, Predicting	

New Vocabulary: rough, smooth, rigid, stiff, firm, flexible, strong, pleasant, unpleasant, solid, liquid, gas, attract, repel, push, pull, larger, smaller, sink, float, circle, square, triangle, oval, heavy, light

Physical Science
Worksheet

GRADE LEVEL: Kindergarten

Topic: Changes in Matter

Grade Level Standard: K-4 Describe physical changes in matter.

Grade Level Benchmark: 1. Describe common physical changes in matter—size, shape; melting, freezing. (IV.2.E.1)

Learning Activity(s)/Facts/Information	**Resources**
Central Question: ***What happens to matter when there is a physical change?*** 1. Fill a bowl with water, put in the freezer, check periodically until frozen. 2. Watch an ice cube melt. 3. Watch the steam come off of a cup of boiling water.	
Process Skills: Observing, Predicting, Drawing conclusions	

New Vocabulary: solid, liquid, gas, bending, tearing, breaking, heating, cooling

Physical Science
Worksheet

GRADE LEVEL: Kindergarten

Topic: Motion of Objects

Grade Level Standard: K-5 Demonstrate the motion of objects.

Grade Level Benchmark: 1. Describe or compare motions of common objects in terms of speed and direction. (IV.3.E.1)

Learning Activity(s)/Facts/Information	**Resources**
Central Question: ***How do you describe the movement of an object?*** 1. Roll different types of balls, which went faster/slower? Drop different objects. Which drops faster? 2. Drive toy cars on a road map labeled N, S, E, W and say which way they're driving. 3. Label the classroom N, S, E, W. Have children move left, right, N, S, E, W. Play Simon says.	http://www.brainpop.com
Process Skills: Observing, Predicting, Drawing conclusions	

New Vocabulary: east, west, north, south, right, left, up, down, fast, slow, faster, slower

Earth/Space Science
Worksheet

GRADE LEVEL: Kindergarten

Topic: Geosphere

Grade Level Standard: K-6 Identify features of the Earth.

Grade Level Benchmark: 1. Describe major features of the Earth's surface. (V.1.E.1)

Learning Activity(s)/Facts/Information	**Resources**
Central Question: ***How could you describe the major features of the Earth's surface?*** 1. "What is the Earth Like?" ★ 2. Play game "Earth Ball" with an inflatable globe ball. Sit in a circle and play catch. Tally the number of times the right thumb lands on land or water. Explain that there are 2/3 more water than land on Earth. ★Activity is attached	
Process Skills: Observing, Classifying	

New Vocabulary: mountains, plains, valleys, oceans, rivers, lakes, deserts

Name_____ Date _____

Science PlaceMat 1

What Is the Earth Like?

Earth/Space Science
Worksheet

GRADE LEVEL: Kindergarten

Topic: Atmosphere and Weather

Grade Level Standard: K-7 Observe and explain weather.

Grade Level Benchmark: 1. Describe weather conditions. (V.3.E.1)

Learning Activity(s)/Facts/Information	**Resources**
Central Question: ***What are the daily changes in weather?*** 1. Graph the weather on a weather chart every day. 2. Chart the temperature on an outside thermometer once a week. 3. Graph what clothing the children wore to school that day.	Thermometer Charting materials Wind sock Rain gauge
Process Skills: Observing, Classifying	

New Vocabulary: cold, hot, warm, cool, cloudy, partly cloudy, foggy, rain, hail, snow, freezing rain, windy, breezy, calm, thunderstorms, lightning, high winds, blizzards, tornadoes

Earth/Space Science
Worksheet

GRADE LEVEL: Kindergarten

Topic: Atmosphere and Weather

Grade Level Standard: K-7 Observe and explain weather.

Grade Level Benchmark: 2. Describe seasonal changes in Michigan's weather. (V.3.E.2)

Learning Activity(s)/Facts/Information	**Resources**
Central Question: ***How does the temperature and precipitation for each season affect what we wear?*** 1. "What are you wearing today?" ★ 2. Draw pictures of what the trees look like in each of the four seasons. ★Activity is attached	
Process Skills: Observing, Classifying ;	

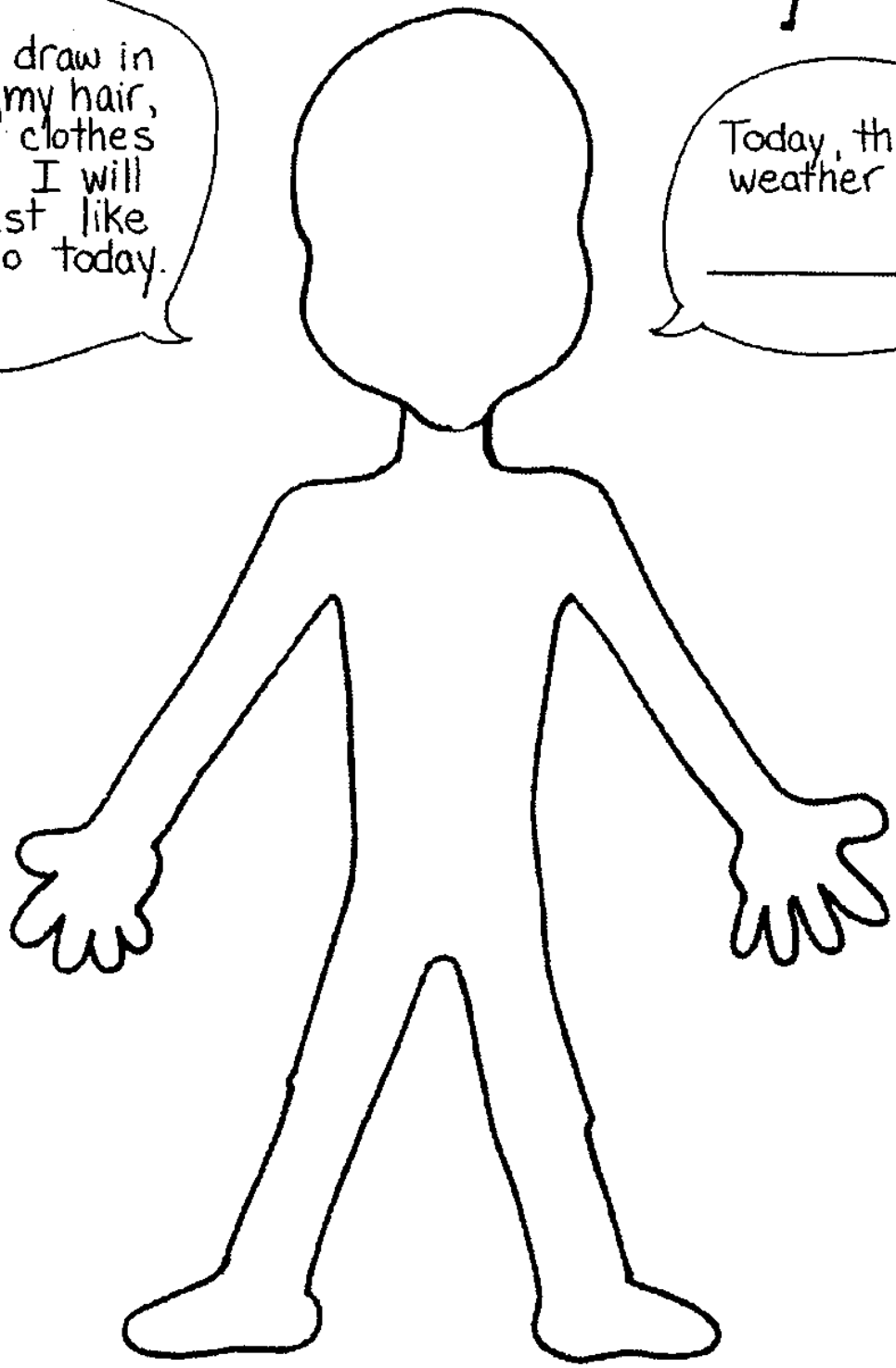
New Vocabulary: fall, winter, spring, summer

What are you wearing today?

_____ Name

Please draw in my face, my hair, and my clothes so that I will look just like you do today.

Today, the weather is _____



Earth/Space Science
Worksheet

GRADE LEVEL: Kindergarten

Topic: Atmosphere and Weather

Grade Level Standard: K-7 Observe and explain weather.

Grade Level Benchmark: 3. Explain appropriate safety precautions during severe weather. (V.3.E.3)

Learning Activity(s)/Facts/Information	**Resources**
Central Question: ***Where is a safe place in severe weather?*** 1. Practice safety procedures to follow during severe weather. 2. Read Flash, Crash, Rumble, and Roll, by Franklin M. Branley.	Flash, Crash, Rumble, and Roll, Franklin M. Branley
Process Skills: Communicating	

New Vocabulary: safety precautions, safe locations, radio broadcasts, severe weather watch and warning

Science Process
Worksheet

GRADE LEVEL: Kindergarten

Topic: Science Process

Grade Level Standard: K-8 Constructing meaning through the scientific process.

Grade Level Benchmark: 1. Use the scientific process to construct meaning. (I.1.E.1-6)

Learning Activity(s)/Facts/Information	**Resources**
Central Questions: ***1. How do scientists ask questions that help them learn about the world?*** ***2. How do scientists figure out answers to their questions by investigating the world?*** ***3. How do scientists learn about the world from books and other sources of information?*** ***4. How do scientists communicate their findings to other scientists and the rest of society?*** ***5. How do scientists reconstruct knowledge that they have partially forgotten?***	
1. Have students observe different buttons. Find each button's match. Draw and color your pairs including the number of holes. ★	Buttons
2. Have the students sort stones into the two circles. Trace and color the stones. How are they the same? How are they different? ★	Stones
★Activity is attached	
Process Skills: Observing, Classifying	

New Vocabulary: observing, classifying, measuring, communicating, controlling variables, developing models and theories

PRODUCTS OF SCIENCE

The process of science generates certain products which also can be arranged in an hierarchy of increasing complexity. These products include scientific terms, facts, concepts, principles, laws, theories, models, and applications.

SCIENTIFIC TERM

A word or words that scientists use to name an entity, object, event, time period, classification category, organism, or part of an organism. Terms are used for communication and would not normally include names given to concepts, laws, models, or theories.

SCIENTIFIC FACT

An observation, measurement, logical conclusion from other facts, or summary statement, which is concerned with some natural phenomenon, event, or property of a substance, which, through an operationally defined process or procedure, can be replicated independently, and which, through such replication, has achieved consensus in the relevant scientific profession. Facts include things such as the speed of light or properties of materials like boiling points, freezing points, or size.

SCIENTIFIC CONCEPT

A regularly occurring natural phenomenon, property, or characteristic of matter which is observable or detectable in many different contexts, and which is represented by a word(s) and often by a mathematical symbol(s) is called a scientific concept. When a scientific concept is fundamental to other concepts and is used extensively in creating such other concepts in nature, like length (or distance), mass, electric charge, and time. Most scientific concepts are derived, that is, defined in terms of basic or other scientific concepts. When a derived scientific concept is in the form of an equation, it is a mathematical definition, not a natural relationship (e.g., destiny, speed, velocity acceleration).

SCIENTIFIC PRINCIPLE

A generalization or summary in the form of a statement or mathematical for when expression, a set of observations of, or measurements for, a variable representing a concept shows a regular dependence on one or more other variables representing other concepts. A principle of science is an expression of generalizations that are significant but are not at the level, in terms of broad applicability or generalizability, to be a scientific law.

EMPIRICAL LAW

An empirical law is a generalization of a relationship that has been established between or more concepts through observation or measurement, but which relies on no theory or model for its expression or understanding. Such laws have important application and are of great importance as cornerstones for theories or models. Examples include Snell's law of refraction, Kepler's Laws, and evolution (but not the theory of natural selection).

SCIENTIFIC THEORY

An ordinary-language or mathematical statement created or designed by scientists to account for one or more kinds of observations, measurements, principles, or empirical laws, when this statement makes one or more additional predictions not implied directly by anyone of such components. When such prediction or predictions are subsequently observed, detected, or measured, the theory begins to gain acceptance among scientists. It is possible to create alternative theories, and scientists generally accept those theories which are the simplest or most comprehensive and general in their accommodation to empirical law and predictive capability (e.g., atomic theory, kinetic molecular theory, theory of natural selection, theory of plate tectonics, quantum theory). Theories which can account only for existing laws make no new predictions, or at least do not have greater simplicity or economy of description when offered as alternatives to accepted theories, are of little value and therefore, generally do not displace existing theories.

SCIENTIFIC MODEL

A representation, usually visual but sometimes mathematical or in words, used to aid in the description or understanding of a scientific phenomenon, theory, law, physical entity, organism, or part of an organism (e.g., wave model, particle model, model of electric current, "Greenhouse" model of the Earth and atmosphere).

UNIVERSAL LAW

A law of science that has been established through repeated unsuccessful attempts to deny it by all possible means and which therefore, is believed to have applicability throughout the universe. There are few such laws, and they are basic to all of the sciences (e.g., Law of Universal Gravitation, Coulomb's Law, Law of Conservation of Energy, Law of Conservation of Momentum).

APPLICATION OF SCIENCE

Utilization of the results of observations, measurements, empirical laws, or predictions from theories to design or explain the working of some human-made functional device or phenomenon produced by living beings and not otherwise occurring in the natural world. (Some such applications depend on several laws or theories, and historically many have been devised without the humans involved having prior knowledge of those theories or laws.) Applications would include engineering and technology and the utilization of science in making decisions on issues that have scientific basis, for example, the relative radiation damage possible from human-made sources as compared with natural radiation.

PROCESS OF SCIENCE

The scientific endeavor involves continually examining phenomena and assessing whether current explanations adequately encompass those phenomena. The conclusions that scientists draw never should assume a dogmatic character as science necessarily is tentative. Authorities do not determine or create scientific knowledge, but rather scientists describe what nature defines and originates.

Those engaged in the scientific endeavor use and rely on certain processes. The processes can be arranged in an hierarchy of increasing complexity–observing, classifying, measuring, interpreting data, inferring, communicating, controlling variables, developing models and theories, hypothesizing, and predicting–but the process scientists use usually do not and need not "happen" in this order.

OBSERVING
Examining or monitoring the change of a system closely and intently through direct sense perception and noticing and recording aspects not usually apparent on casual scrutiny.

CLASSIFYING
Systematic grouping of objects or systems into categories based on shared characteristics established by observation.

MEASURING
Using instruments to determine quantitative aspects or properties of objects, systems, or phenomena under observation. This includes the monitoring of temporal changes of size, shape, position, and other properties or manifestations.

INTERPRETING DATA
Translating or elucidating in intelligible and familiar language the significance or meaning of data and observations.

INFERRING
Reasoning, deducing, or drawing conclusions from given facts or from evidence such as that provided by observation, classification, or measurement.

COMMUNICATING
Conveying information, insight, explanation, results of observation or inference or measurement to others. This might include the use of verbal, pictorial, graphic, or symbolic modes of presentation, invoked separately or in combination as might prove most effective.

CONTROLLING VARIABLES
Holding all variables constant except one whose influence is being investigated in order to establish whether or not there exists an unambiguous cause and effect relationship.

DEVELOPING MODELS AND THEORIES

Created from evidence drawn from observation, classification, or measurement, a model is a mental picture or representative physical system of a phenomenon (e.g., a current in an electric circuit) or real physical system (e.g., the solar system). The mental picture or representative system then is used to help rationalize the observed phenomenon or real system and to predict effects and changes other than those that entered into construction of the model. Creating a theory goes beyond the mental picture or representative model and attempts to include other generalizations like empirical laws. Theories often are expressed in mathematical terms and utilize models in their description (e.g., kinetic theory of an ideal gas, which could utilize a model of particles in a box).

HYPOTHESIZING

Attempts to state simultaneously all reasonable or logical explanations for a reliable set of observations–stated so that each explanation may be tested and, based upon the results of those tests, denied. Although math can prove by induction, science cannot. In science, one can only prove that something is not true. Accumulated evidence also can be used to corroborate hypotheses, but science remains mainly tentative.

PREDICTING

Foretelling or forecasting outcomes to be expected when changes are imposed on (or are occurring in) a system. Such forecasts are made not as random guesses or vague prophecies, but involve, in scientific context, logical inferences and deductions based (1) on natural laws or principles or models or theories known to govern the behavior of the system under consideration or (2) on extensions of empirical data applicable to the system. (Such reasoning is usually described as "hypothetico-deductive.")

Source: The National Science Teachers Association

Name _____

CLASSIFYING

1. Sort the stones into two groups in the circles below.

2. Trace around the stones and color them.

3. How are the stones in the two groups different?

_____

_____

_____

4. How are the stones in each group alike?

_____

_____

_____

Name _____

OBSERVING

1. Put a pair of matching buttons in each box.
2. Trace around the buttons.
3. Color the buttons and draw dots to show the holes.

Science Process
Worksheet

GRADE LEVEL: Kindergarten

Topic: Science Process

Grade Level Standard: K-9 Reflect on the scientific processes.

Grade Level Benchmark: 1. Use the scientific process to reflect on meaning. (II.1.E.1-4)

Learning Activity(s)/Facts/Information	**Resources**
Central Questions: ***1. How do scientists decide what to believe?*** ***2. How is science related to other ways of knowing?*** ***3. How do science and technology affect our society?*** ***4. How have people of diverse cultures contributed to and influenced developments in science?*** 1. Have the students place one hand into a sock and feel the object inside. Record responses on a data sheet. Draw a picture of what you think the object looks like.★ ★Activity is attached	
Process Skills: Inferring, Communicating, Predicting, Interpreting data	

New Vocabulary: inferring, interpreting data, communicating, hypothesizing, predicting

Name _____

INFERRING

1. Put your hand in the sock.
2. How does the object feel?

_____

_____

_____

_____

3. Draw a picture of how you think the object in the sock looks.

Science Process
Worksheet

GRADE LEVEL: Kindergarten

Topic: Science Process

Grade Level Standard: K-10 Apply the scientific method.

Grade Level Benchmark: 1. Use the scientific method to conduct an experiment/ investigation.

Learning Activity(s)/Facts/Information	**Resources**
1. Make mini landfills. Fill three jars with soil. Bury a banana chunk, a piece of newspaper, and a chunk of styrofoam. Watch as they decompose throughout the year. Other items can be used such as a bottlecap, penny, plastic, and cardboard. – Question – Research (Collection and Information) – Hypothesis – Investigation/Experimentation – Procedures – Results – Conclusions	
Process Skills: Observing, Communicating, Predicting, Interpreting, Inferring, Hypothesizing	

New Vocabulary: question, research (collection of information), hypothesis, investigation, experimentation, procedures, results, conclusions

Technology
Worksheet

GRADE LEVEL: Kindergarten

Topic: Technology

Grade Level Standard: K-11 Use a variety of technology.

Grade Level Benchmark: 1. Use a variety of technology in scientific investigation/ experimentation.

Learning Activity(s)/Facts/Information	**Resources**
1. Multimedia software. 2. Internet, teacher and adult led activities. 3. Folder on desktop with websites for children to access. 4. Virtual field trip.	Explorpedia The Magic School Bus
Process Skills: Observing, Classifying, Comparing	

New Vocabulary: rulers, hand magnifying lenses, measuring devices, thermometer

Gender/Equity
Worksheet

GRADE LEVEL: Kindergarten

Topic: Gender/Equity

Grade Level Standard: K-12 Explore contributions to science.

Grade Level Benchmark: 1. Develop an awareness of contributions made to science by people of diverse backgrounds and cultures. (II.1.E.5)

Learning Activity(s)/Facts/Information	**Resources**
1. Take a field trip to the local zoo or museum. 2. Take a virtual field trip to the virtual zoo or museum. 3. Use dramatic play to have girl and boy weather people and other jobs.	
Process Skills: Observing, Classifying	

New Vocabulary: zoo keeper, scientist, Diane Fossi, Jane Goodall, weatherperson

Assessment

Kindergarten

Kindergarten science is at the exploratory level. Assessment for every standard and benchmark may not be necessary. Much of kindergarten assessing is through teacher observation while children are working with materials or participating in activities. The teacher is constantly assessing student understanding by asking probing questions while students are exploring. Responses can be recorded/documented. Student mastery of a concept or idea should be documented in individual portfolios.

The following are oral/activity assessment examples and ideas for Organization of Living Things, Matter and Energy, and Motion of Objects

Assessment
Kindergarten

ORGANIZATION OF LIVING THINGS

Classroom Assessment SCI.III.2.E.1
(Explain characteristics and function of observable body parts in a variety of animals.)

Assessment Activities

Using (Problem):
- Identify living and non-living things.
- Identify observable body parts in pictures of living things - identify their function.

Constructing (Problem):
- Cut out pictures of living and non-living things and make separate collages.
- Sort pictures of living things according to functions of specific body parts (i.e. wings)

Reflecting (Problem):
- Discuss the difference between living and non-living.
- Discuss the similarities and differences of observable body parts and how they make each living thing different.

Classroom Assessment SCI.III.2.E.5
(Explain functions of selected seed plant parts.)

Assessment Activities

Using (Problem):
- Identify seed plant parts.

Constructing (Problem):
- Draw and label a seed plant and its parts.

Reflecting (Problem):
- Tell the “job” of each basic seed plant part - see vocabulary.

MATTER AND ENERGY

Classroom Assessment SCI.IV.1.E.1

(Classify common objects and substances according to observable attributes/ properties.)

Assessment Activities

Using (Problem):

- Give examples of common objects and substances according to observable attributes/properties - see vocabulary.

Constructing (Problem):

- Sort common objects according to specific attributes/properties (i.e. sink, float; larger, smaller; push, pull) - see vocabulary.

Reflecting (Problem):

- Hold up an object—have children classify according to observable attributes/properties.

MOTION OF OBJECTS

Classroom Assessment SCI.IV.3.E.1

(Describe or compare motions of common objects in terms of speed and direction.)

Assessment Activities

Using (Problem):

- Describe the directions and different speeds an object can move. See vocabulary.

Constructing (Problem):

- Drive toy cars on a road map labeled N, S, E, W and say which way they are driving and which cars are driving faster or slower than the other.

Reflecting (Problem):

- Have the students move N, S, E, W, left, right, fast or slow, depending on the teachers instructions.

ATMOSPHERE AND WEATHER

Classroom Assessment SCI.V.3.E.1

(Describe weather conditions.)

Assessment Activities

Using (Problem):

- Describe/draw the weather conditions for a given season.

Constructing (Problem):

- Make a book of seasons. Student generate their own pictures based on weather conditions unique to each season.

Reflecting (Problem):

- The student should be able to compare one season's weather to another.

Classroom Assessment SCI.V.3.E.2

(Describe seasonal changes in Michigan's weather.)

Assessment Activities

Using (Problem):

- Identify what people in the class are wearing today and how that relates to the weather.

Constructing (Problem):

- Make a book about what we wear during each season. "What do you wear in the winter, spring, summer, fall?" Draw themselves and what they wear.

Reflecting (Problem):

- Discuss what would be appropriate to wear during each season according to the temperature changes.

RESOURCES

Materials

- seashells
- buttons
- stones
- seeds
- variety of spices
- materials for making a terrarium
  - 2-liter bottle
  - potting soil
  - plants/plant cuttings
- attribute blocks
- inflatable globe ball
- wind sock
- rain guage
- thermometer
- used magazines for cutting
- fish tank—rocks, plants, food, fish

NOTE: Any additional materials that students can use to free explore (i.e., magnets, sand/water table) are encouraged. Teachers should provide as many enrichment activities as they can.

Books

- "In the Woods," Ermanno Christini/Luigi Puricello
- "The Tiny Seed," Eric Carle
- Flash, Crash, Rumble and Roll," Franklin Branley
- A variety of books on animals, plants, weather