

Week 1: Learning to Observe Like a Scientist

Lesson Title: Observing With Your Senses Grade: Kindergarten/1 Week: 1 Topic: Observing Like a Scientist		
Lesson Objectives: Learn observation skills which are very important to scientists Use the five senses to observe different objects Record their observations on an observation sheet Classify objects according to different characteristics Formulate questions based on their observations Create a book of observations with illustrations of what they have observed.		
Art/Science Inclusion (brief description of how your lesson presents an integration of art and science concepts.) The proposed lesson will combine teaching the students the observation technique using their five senses as well as formulating questions related to their observations with depicting what they are observing in the form of artistic illustrations. The artwork the students produce will be a meaningful reflection of their scientific observations as well as their proposed questions. Art Open-Ended Question (what problem, task, or exploration will students be dealing with (should have multiple ways to complete it)) How can we create illustrations based on our five senses? Art Education Standard (should include at least one, see https://www.arteducators.org/learn-tools/national-visual-arts-standards) AS2: organize and develop artistic ideas and work. AS6: convey meaning through the presentation of artistic work. AS7: Perceive and analyze artistic work. AS10: synthesize and relate knowledge and personal experiences to make art. Science Education Standard (should include at least one, see https://www.doe.in.gov/standards/science-computer-science , NGSS also great)		
K.PS.1 Plan and conduct an investigation using all senses to describe and classify different kinds of objects by their composition and physical properties. Explain these choices to others and generate questions about the objects. K.LS.2 Describe and compare the physical features of common living plants and animals.		
Timeline -Discussion about what scientists do.	Lesson Description Scientists use observation as a primary step to create questions and explore the world around them.	Modification for Inclement Weather The students will observe objects within the classroom rather than outdoors.

<p>-Discussion about the five senses.</p> <p>-Introduce observation book and make predictions</p> <p>-Make observations and record them in a book.</p> <p>- Classify objects according to different characteristics</p>	<p>We will conduct a short discussion in order to get an idea about what the students know about what scientists do. We will then start conversation about the five senses and have the students share what they know about the five senses. Students will then use their senses to observe objects both inside and outside of the classroom. As the students observe, they will be asked to record their observations in their observation books using illustrations.</p> <p>On the inside of the classroom, the children will receive a closed bag of items and will first try using their senses to guess some of the objects inside the bag. Afterwards, they will observe different objects using their senses and they will record their observations of the observation book. Afterwards, they will attempt to classify their objects based on two traits (for example long or short, smooth or rough etc..). Each object will be placed in a plastic plate labeled with a sticky note with the title of the characteristic. For those who finish this task successfully, they can attempt to come up with two other traits to classify their objects by.</p> <p>On the outside, the children will observe several objects related to nature and surrounding using their senses. Objects observed can be flowers, trees, different leaves, birds, squirrels and other objects like benches, lights or cars. They will also be carrying the observation books with them to record their observations as they move around.</p> <p>A proposal could be to ask each child to wear a blindfold for a few minutes to experience the senses of touch, smell and sound. We are not too encouraged for children to be putting anything in their mouth in an attempt to practice safety to the greatest extent in the time of the COVID-19 pandemic.</p>	
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<p>Materials List (please be detailed; include exact quantities)</p> <ul style="list-style-type: none"> - The Handout (one for each student) - Markers and Colored Pencils (some for each student) - Stapler (1) - Tennis balls (1 per child) - Ping pong balls (preferably the small different colored balls we have in the materials room) - Colored wooden blocks (couple for each kid) - Small pieces of playdough (I saw we have different colored ones and they have a nice smell) - Marbles (few for each kid) - Buttons (few for each kid) - Yarn (one string for each kid) - Colored Wool (one piece for each kid) - Pennies (one or two for each kid) - Toy Cars (one or two for each kid) - Tuning forks (those combine a unique look with color and they make a sound) - Small pom pom balls (a few per kid) - Feathers (a couple per kid) - Colored toothpicks (a few per kid) - Beads (a few per kid) - Colored pipe cleaners (a few per kid) - Colored poker chips (one or two of each color per kid) - Balloons (one or two per kid) - Something sweet smelling like vanilla and cocoa - Plastic plates (two per kid) - Sticky notes - Hand lens (one per kid) - Non transparent bags (one per kid) 	<p>Modification for Inclement Weather</p> <p>Same supplies needed.</p>
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Handouts: Please include links to handouts needed for the lesson (and how many you need), or copy the handout material to this document.

Week 2: Light and Shadow

<p>Lesson Title: Science of Shadows in Art</p> <p>Grade: Kindergarten/1</p>	<p>Instructors: Nader + Emma + Julia</p> <p>Week: 2</p> <p>Topic: Light and Shadows</p>
<p>Lesson Objectives:</p> <ul style="list-style-type: none"> - Students will be able to explore the concepts of shadows through the use of their own artistically made sundials, as well as by casting light from a flashlight on commonly found everyday objects. - Students will have a chance to artistically represent the shadows that they observe with a drawing. 	

- Students will be able to observe the shadows of their friends formed by sunlight and trace them with chalk.
- Students will be able to explore the concept of light refraction through a clear glass of water using some artistic shapes and their own drawings.
- Students will be building upon what they learned from the previous week, as they will be using scientific observations to record, analyze and make a conclusion of the phenomena they are witnessing within their experiments.

Art/Science Inclusion (brief description of how your lesson presents an integration of art and science concepts.)

Students will be creating their own sundial which allows them to create a 3-D object that works for a scientific purpose of explaining how the shadow placement moves with the movement of the earth around its own orbit and the consequent change of the position of the sun. Students will also be able to draw their own images and then see how those images are refracted behind a glass of water because to the human eye, the image seems to change orientation. This combines art concepts of drawing as well as the science of light refraction. Lastly, students will be tracing shadows of objects made by the sun which again incorporates drawing with the science of shadows.

Art Open-Ended Question (what problem, task, or exploration will students be dealing with (should have multiple ways to complete it))

How does light impact the way an object looks? How can we represent light and shadows within our artwork?

Art Education Standard (should include at least one, see <https://www.arteducators.org/learn-tools/national-visual-arts-standards>)

AS2: organize and develop artistic ideas and work.

AS6: convey meaning through the presentation of artistic work.

AS7: Perceive and analyze artistic work.

AS10: synthesize and relate knowledge and personal experiences to make art.

Science Education Standard (should include at least one, see <https://www.doe.in.gov/standards/science-computer-science>, NGSS also great)

K.PS.1 Plan and conduct an investigation using all senses to describe and classify different kinds of objects by their composition and physical properties. Explain these choices to others and generate questions about the objects.

K.PS.2 Identify and explain possible uses for an object based on its properties and compare these uses with other students' ideas.

SEPS.1 Posing questions (for science) and defining problems (for engineering)

SEPS.2 Developing and using models and tools

SEPS.3 Constructing and performing investigations

SEPS.4 Analyzing and interpreting data

SEPS.6 Constructing explanations (for science) and designing solutions (for engineering)

K.ESS.1 Make observations to determine the effect of sunlight on Earth’s surface and use tools and materials to design and build a structure to reduce the warming effect on Earth's surface.

Timeline	Lesson Description	Modification for Inclement Weather
<p>Create a sundial</p> <p>Talk about refraction</p> <p>Outside shadow activity</p>	<p>Students will create their own sundial which allows them to create a 3-D object that works for a scientific purpose.</p> <p>Students will draw their own images or patterns and then observe how those images are refracted behind a glass/jar of water. They will also observe how refraction occurs with some patterned images</p> <p>Students will be able to observe how the sun creates shadows and can trace their shadows on the sidewalk with chalk. They will also have the option to create a drawing on a piece of paper of an object and the shadow that it creates from the light coming from the sun</p>	<p>Students will use a flashlight to create a shadow of an object and then trace that shadow on a piece of paper if we can't go outside.</p>
Materials List (please be detailed; include exact quantities)		Modification for Inclement Weather
<p>markers</p> <p>colored pencils</p> <p>paper</p> <p>paper plates (10)</p> <p>chalk</p> <p>glass jars (transparent)</p> <p>tennis ball (3)</p> <p>cup (3)</p> <p>wooden blocks (3)</p> <p>feathers (3)</p> <p>toy cars (3)</p> <p>Flashlights (9)</p>		<p>flashlights</p>

Week 3: Exploring Color in Nature

Lesson Title: Color Scavenger hunt & Colored Chameleons

Grade: Kindergarten/1

Week: 3

Topic: Exploring Color in Nature

Lesson Objectives:

- Students will be building upon what they learned from the previous weeks, as they will be using scientific observations to record, analyze and make a conclusion of the phenomena they are witnessing within their experiments. They will also be returning to the idea of light and how reflection of light generates the different colors they are observing in nature around them.
- Students will observe the nature around them for a given amount of time. During their observation they will collect objects in nature that are of different colors, and they will match the colors of the different objects to the colors within a color wheel given to them. This will help affirm that nature contains different objects possessing different colors.
- Students will learn how colors in nature can be used as a defensive mechanism for animals. This will be demonstrated by the example of the chameleon that changes colors to blend into the background.
- Students will get the chance to experience what they learned about the defensive mechanism of animals themselves by coloring their own chameleon to match the background of their favorite object.

Art/Science Inclusion (brief description of how your lesson presents an integration of art and science concepts.)

For the first activity of the lesson, the scavenger hunt, students are doing scientific observation and exploring the phenomena that nature has many colors. They are also using the artistic ability of identifying colors and matching them to the color wheel. The second activity of the lesson discusses different animals who change colors as camouflage. The students will incorporate the scientific idea of animals changing colors to match their environment along with art concepts of drawing and coloring to create their own chameleon and its habitat.

Art Open-Ended Question (what problem, task, or exploration will students be dealing with (should have multiple ways to complete it))

Where can we find the colors of the color wheel within nature? Why are animals different colors and why do some of them change colors?

Art Education Standard (should include at least one, see <https://www.arteducators.org/learn-tools/national-visual-arts-standards>)

AS2: organize and develop artistic ideas and work.

AS6: convey meaning through the presentation of artistic work.

AS7: Perceive and analyze artistic work.

AS10: synthesize and relate knowledge and personal experiences to make art.

Science Education Standard (should include at least one, see <https://www.doe.in.gov/standards/science-computer-science>, NGSS also great)

SEPS.2 Developing and using models and tools

SEPS.3 Constructing and performing investigations

K.PS.1 Plan and conduct an investigation using all senses to describe and classify different kinds of objects by their composition and physical properties. Explain these choices to others and generate questions about the objects.

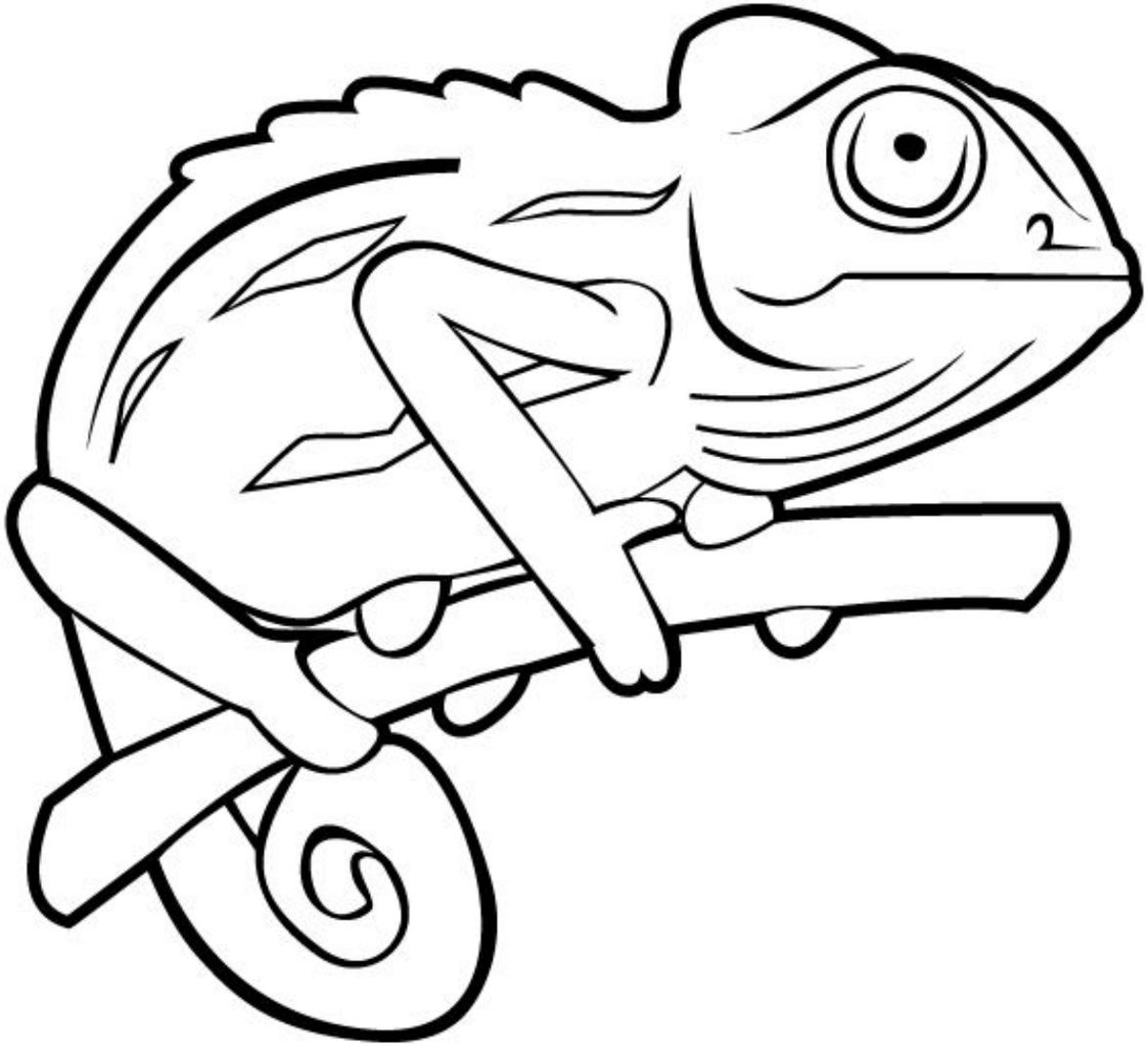
K.LS.2 Describe and compare the physical features of common living plants and animals

1.LS.3 Make observations of plants and animals to compare the diversity of life in different habitats.

Timeline	Lesson Description	Modification for Inclement Weather
<p>Color in nature scavenger hunt</p> <p>Video</p> <p>Colored Chameleons</p>	<p>The students will each be given a color wheel and will be able to explore the outdoors in order to find the color wheel colors within nature. Students will use their observation skills in order to describe these colorful objects</p> <p>Students will watch a video about how animals are different colors and how some can even change colors depending on their environment. https://youtu.be/ydrc489USbM https://youtu.be/ioblgpA5eTo</p> <p>The students will be able to choose a colorful item they found in nature or a specific environment and they will create a chameleon that would blend into that object or environment.</p>	<p>The scavenger hunt will be done indoors if there is inclement weather. We will collect leaves and different colors from nature to bring in for the students to observe.</p>
<p>Materials List (please be detailed; include exact quantities)</p> <p>Color wheel handout (10 copies) Colored pencils Chameleon Handout below Pencils Markers</p>		<p>Modification for Inclement Weather</p>

Handouts: Please include links to handouts needed for the lesson (and how many you need), or copy the handout material to this document.

We will need 12 copies of the chameleon handout below.



Week 4: Building with Mother Nature

Lesson Title: Stick Ships & Painting with nature

Grade: Kindergarten/1

Week: 4

Topic: Building With Mother Nature

Lesson Objectives:

- Students will be building upon what they learned from the previous weeks, as they will be using scientific observations to record, analyze and make a conclusion of the phenomena they are witnessing within their experiments. They will also be returning to the idea of how animals interact within their environment and use the resources around them.
- Students will observe the nature around them for a given amount of time. During their observation they will collect objects in nature that could be used to help them create objects that they will use to create a painting.
- Students will learn how animals use the nature around them in order to build their homes which include nests, dams, etc.
- Students will be able to use sticks collected outside in order to build a sailboat. Twigs and leaves that we usually see on the ground and mostly ignore can be made into something practical and artistic.

Art/Science Inclusion (brief description of how your lesson presents an integration of art and science concepts.)

Students will be creating a sailboat out of sticks from nature. This incorporates the idea that we get our materials from nature and they are also using artistic elements to create a 3-D object. They will also get to decorate the sails of their boats. Students will be learning about animals that build their homes in nature which ties in life science concepts. They will then create paintings of these homes using tools that they found in nature. This incorporates “building” with nature because they are building their own tools to create art.

Art Open-Ended Question (what problem, task, or exploration will students be dealing with (should have multiple ways to complete it))

How can resources in nature be used for building? How do animals use nature in order to build similar objects for survival?

Art Education Standard (should include at least one, see <https://www.arteducators.org/learn-tools/national-visual-arts-standards>)

AS2: organize and develop artistic ideas and work.

AS6: convey meaning through the presentation of artistic work.

AS7: Perceive and analyze artistic work.

AS10: synthesize and relate knowledge and personal experiences to make art.

Science Education Standard (should include at least one, see <https://www.doe.in.gov/standards/science-computer-science>, NGSS also great)

SEPS.2 Developing and using models and tools

SEPS.3 Constructing and performing investigations

1.LS.4 Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.

K-2.E.2 Develop a simple sketch, drawing, or physical model to illustrate and investigate how the shape of an object helps it function as needed to solve an identified problem.

K.PS.2 Identify and explain possible uses for an object based on its properties and compare these uses with other students' ideas.

<p>Timeline</p> <p>Build a Boat</p> <p>Animals Building their Homes</p> <p>Painting with Nature</p>	<p>Lesson Description</p> <p>Students will use twigs, string, and glue to build a sailboat. Students will be able to decorate their own masts. They will then try to get their boats to float in the Jordan river.</p> <p>Students will come inside and will watch different videos of animals who build their homes in nature.</p> <p>Students will use different objects from nature to create painting tools (dandelion paintbrush, leaf prints, etc.). They will use these objects to create a painting, either of one of the animals' habitats they saw or of something of their own creation.</p>	<p>Modification for Inclement Weather</p> <p>.If it is raining the students will try to get their boats to float in a tub of water.</p>
<p>Materials List (please be detailed; include exact quantities)</p> <p>Twine/string Paper Colored pencils Paint (primary colors) Cups for water (9)</p>		<p>Modification for Inclement Weather</p> <p>Tub of water.</p>