**Oakland Schools Science Scope**

**Kindergarten**

**Unit 3– Basic Needs of Living Things**

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**Unit 3 – Basic Needs of Living Things**

**About Our Scope Unit/Lesson Template**

This template is designed to serve several teaching and learning principles considered as staples of state of the art science instruction. Here are the key principles in summary:

* It’s critical to **elicit prior knowledge** as a unit or lesson begins.
* **Key questions** should drive student explorations and investigations.
* **Activity Before Concept** – Student inquiry-based explorations which give personal experience with phenomena and ideas should precede a presentation of science ideas.
* **Evidence is the heart of the scientific enterprise.** Students generate evidence and analyze patterns in data that help to construct scientific explanations around key questions.
* **Concept Before Vocabulary** – Attaching science vocabulary to concepts developed by student investigations yields more success than beginning a unit or lesson with a list of science vocabulary.
* **Talk, argument** **and writing** are central to scientific practice and are among the most important activities that develops understanding.
* **Application** of the ideas provides review, extends understanding, and reveals relevance of important ideas.
* **Assessment** of knowledge, skill, and reasoning should involve students throughout the learning process and be well aligned to the main objectives and activities of the unit.

The Scope Science template is designed to put these principles into practice through the design of the ***SCOPE LEARNING CYCLE FOR SCIENCE***. Each unit has at least one cycle. The components are listed below:

|  |  |
| --- | --- |
| The Key Question for the Cycle | Each cycle has one, open-ended driving question that relates to all the content and skills of the unit. The Key Question is presented at the opening of the cycle and revisited at the cycles conclusion. |
| Engage and Elicit | Each unit begins with an activity designed to elicit and reveal student understanding and skill prior to instruction. Teachers are to probe students for detailed and specific information while maintaining a non-evaluative stance. They also can record and manage student understanding which may change as instruction proceeds. |
| Explore | A sequence of activities provides opportunities to explore phenomena and relationships related to the Key Question of the unit. Students will develop their ideas about the topic of the unit and the Key Question as they proceed through the Explore stage of the learning cycle.  Each of the activities may have its own Focus Question or central task that will be more focused than the unit question. The heart of these activities will be scientific investigations of various sorts. The results, data and patterns will be the topic of classroom discourse and/or student writing. A key goal of the teacher is to reference the Key Question of the cycle, the Explore and Elicit of the students and to build a consensus especially on the results of the investigations. |
| Explain | Each unit has at least one activity in the Explain portion of the unit when students reconcile ideas with the consensus ideas of science. Teachers ensure that students have had ample opportunity to fully express their ideas and then to make sure accurate and comprehensible representations of the scientific explanations are presented. A teacher lecture, reading of science text or video would be appropriate ways to convey the consensus ideas of science. Relevant vocabulary, formal definitions and explanations are provided. It’s critical that the activity and supporting assessments develop a consensus around the Key Questions and concepts central to the unit. |
| Elaborate | Each unit cycle has at least one activity or project where students discover the power of scientific ideas. Knowledge and skill in science are put to use in a variety of types of applications. They can be used to understand other scientific concepts or in societal applications of technology, engineering or problem solving. Some units may have a modest Elaborate stage where students explore the application of ideas by studying a research project over the course of a day or two. Other units may have more robust projects that take a few weeks. |
| Evaluation | While assessment of student learning occurs throughout the unit as formative assessment, each unit will have a summative assessment. Summative assessments are posted in a separate document. |

**Kindergarten**

**Unit 3 – Basic Needs of Living Things**

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**Unit 3 – Basic Needs of Living Things**

**Unit Introduction**

This unit attends to the Michigan Grade Level Content Expectations as they are gathered in Unit 3 of the Michigan Department of Education Science Companion Document. Topically, the unit addresses concepts related to the needs of animals and animals as well as how their environment supports these needs.

As teachers look for ways to have students use real world data, apply interactive technology to real world questions and foster meaningful tasks for reading, writing, argumentation and mathematics and framed by the Common Core Curriculum Standards, the issues here provide abundant opportunity. The main limitation is the class time available given other content demands.

*On the Common Core State Standards for English Language Arts and Literacy in Science*

All science teachers will find the Common Core State Standards of ELA a tremendous asset for reaching learning objectives in science education. Reading, writing, argumentation and discourse are central proficiencies necessary for success in science. All teachers should become fluent with the document and will likely find it validating.

[**http://www.corestandards.org/assets/CCSSI\_ELA%20Standards.pdf**](http://www.corestandards.org/assets/CCSSI_ELA%20Standards.pdf)

These standards are best reached with science instruction that connects content to real-world problems and experiments, complimented with scientific writing, challenging questions, processes for classroom discussion and debate and use of scientific text.

The following Common Core ELA Standards have been highlighted in this unit:

* CCSS.ELA-LITERACY.W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
* [CCSS.ELA-LITERACY.W.K.5](http://www.corestandards.org/ELA-Literacy/W/K/5/)  
  With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed.
* [CCSS.ELA-LITERACY.W.K.7](http://www.corestandards.org/ELA-Literacy/W/K/7/)  
  Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).
* CCSS.ELA-LITERACY.W.K.8

With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

**Science Notebook**

It is recommended that teachers require students to use a science notebook to support learning in this unit. Here are some features and policies to consider:

* Options for a notebook include: bound style, a self-created notebook made with plain pieces of paper stapled together, or template style (see idea given in unit). Some recording sheets will be glued into notebooks in throughout the year.
* Use the first page for students to draw themselves as scientists
* Make grade-level decisions for format of writing in the notebooks (Are you going to date or number the pages and how?)
* Notebooks are to stay in the classroom.

**NOTE: Fossweb provides a helpful overview of the purpose, benefits, organization and application of Science Notebooks K-2. [http://www.google.com/url?sa=t&rct=j&q=science%20notebooks%20k-2&source=web&cd=1&cad=rja&uact=8&ved=0CCAQFjAA&url=https%3A%2F%2Fwww.fossweb.com%2Fdelegate%2Fssi-foss-ucm%2Fucm%3FdDocName%3DD567879&ei=4uwNVOe3BdSwyASuroGADw&usg=AFQjCNFP8K3\_1vZzhXy1et\_NLhB-TyXy6Q&bvm=bv.74649129,d.aWw](http://www.google.com/url?sa=t&rct=j&q=science%20notebooks%20k-2&source=web&cd=1&cad=rja&uact=8&ved=0CCAQFjAA&url=https%3A%2F%2Fwww.fossweb.com%2Fdelegate%2Fssi-foss-ucm%2Fucm%3FdDocName%3DD567879&ei=4uwNVOe3BdSwyASuroGADw&usg=AFQjCNFP8K3_1vZzhXy1et_NLhB-TyXy6Q&bvm=bv.74649129,d.aWw" \t "_blank)**

**Advance Preparation**

1. Create and send home a parent letter offering a brief explaination of the unit including important vocabulary that will be covered. Add any homework pieces. There are many household supplies needed for this unit so you will want to plan early to obtain them. Most of the items below can be easily acquired through this same newsletter home.
2. If the Class word wall is reserved for high frequency words, create a Word List anchor chart entitled: Unit 3 Basic Needs of Living Things for adding new science vocabulary. Students could also add these to their notebooks as they are introduced or explained.
3. Create new student science notebooks for Unit 3 if not using the same notebook for the year. Make sure you have a version for yourself to model in.
4. Start growing seeds or plant cuttings (bean seeds and radish seeds work well) for Activity 7. Each team will need two similar plants for their investigation that have already germinated into young plants.
5. Collect 16 oz soft sided water bottles with lids and label free for Activity 5.
6. Collect 2 liter clean and label free soft drink bottles for Activity 5.
7. Collect shoeboxes (one per student) for Activity 11 – Zoo Diorama
8. Collect items for the Zoo Diorama such as plastic zoo animals or pictures of them and other items that can be used to design them
9. Locate trade books on plant growth and animal care for read aloud. Example include:

*What’s Alive* by Kathleen Weidner Zoehfeld

*Worms* by Ann Heinrich

*An Earthworms Life* by John Himmelman

*Jack’s Garden by Henry Cole*

*One Bean* by Anne Rockwell

*Living Sunlight* by Molly Bang

*How a Seed Grows* by Helene Gorden

*The Carrot Seed* by Ruth Krauss

*Living Things Need Water* by Bobbie Kalman *What Is A Living Thing?* by Bobbie Kalman

A variety of other non-fiction books on plants and animals (Zoo Books are a great picture resource)

1. Activity 4 (Investigating Plants) and Activity 6 (Investigating Earthworms) will continue for a number of sessions. Students will need time to record observations of their plants and their earthworm home regularly for a few weeks before continuing with the rest of the units’ lessons.

**Introduction**

In this unit students will begin to explore the natural world around them by determining the differences between living and nonliving things. Students will learn that living things include both plants and animals. The focus of the unit will be on the basic needs of all living things (air, water, food and space). Students will gain understanding of this concept through the exploration and investigation of the needs of plants and animals. They will apply their understanding by writing an “All About Book” and designing a habitat for a zoo animal.

**Learning Objectives**

Students will be able to:

* Identify and compare living and nonliving things (L.OL.00.11)
* Identify living things as plants and animals (L.OL.00.12)
* Describe how earth materials contribute to plant and animal life (E.SE.00.12)
* Make purposeful observation of living and nonliving things using the appropriate senses (S.IP.00.11).
* Generate questions about living things based on observations (S.IP.00.12.)
* Plan and conduct simple investigations into the basic needs of living things (S.IP.00.13.)
* Manipulate simple tools (hand lens, balances) that aid observation and data collection (S.IP.00.14.)
* Construct simple charts from data and observations of living things (S.IP.00.16.)
* Share ideas about the needs of living things through purposeful conversation (S.IA.00.12.)
* Communicate and present findings of observations of living things (S.IA.00.13.)
* Develop strategies for information gathering (ask an expert, use a book, make observations, conduct simple investigations, and watch a video) (S.IA.00.14.)
* Demonstrate science concepts about the needs of living things through illustrations, performances, models, exhibits, and activities (S.RS.00.11.)

**Key Question: What Do Living Things Need to Survive?**

**Engage and Explore**

**Activity 1 –Sorting for Storage**

**Purpose**

To sort objects according to what they need to survive storage.

**Activity Description**

Students examine a variety of objects and organisms and decide which of the observed items can or cannot survive in a closed box over the summer. They will use their observations of the two types of objects (can be stored in a box and cannot be stored in a box) to create a chart comparing what the objects in the two categories need to “survive” the summer. Students will then sort picture cards into two categories –can and cannot be stored in a box over the summer – using the criteria they established as a class.

**Focus Question**

How do scientists predict if something can survive in a closed box?

**Duration**

One class session

**Suggestions/Resources:**

**Materials**

* Living and nonliving objects (i.e., plant, rock, worm, ladybug, bug, mealworm, ant, roly-poly, cricket, toy car, spider, classroom objects, etc.)
* Science Notebooks
* Plastic storage container
* Pictures of living and non-living items

<http://crisscrossapplesauce.typepad.com/files/living-nonliving-flashcards.pdf>

(Additional sources: Lakeshore[Building Language Photo Library](http://products.lakeshorelearning.com/search?p=R&srid=S2-USCDR02&lbc=lakeshorelearning&w=picture%20cards&url=http%3a%2f%2fwww.lakeshorelearning.com%2fproduct%2fproductDetBySkuCode.jsp%3fproduct_code%3dAA248%26f%3dsli&nurl=http%3a%2f%2fwww.lakeshorelearning.com%2fproduct%2fproductDetBySkuCode.jsp%3fproduct_code%3dAA248%26f%3dsli%26findingmethod%3dsearch&rurl=yes&rk=2&uid=738194636&sid=2&ts=ajax&rsc=hbx8SkMhWO8CTkzG) or Kindergarten picture cards)

* Chart paper, markers
* 2 hula hoops, string, or pocket chart for sorting picture cards (optional)

**Teacher Preparation**

1. Gather supplies – one container filled with both living and nonliving objects (i.e., plant, rock, bug, mealworm, cricket, toy car, spider, classroom objects, etc.)
2. Prepare a set of Living and Nonliving pictures on card stock of each student team.
3. Prepare a class chart titled: ***Can and Can Not Store*** (See lesson for example)

**Classroom Procedure**

1. Connection: Tell the students that they will be working on a new unit in science. Use the labeled scientist Anchor Chart from prior unit and briefly review it as you remind them that they will use all their senses in a safe manner to learn about living things.
2. Display a collection of living and non-living items, including items commonly found in the classroom. Have students examine the items using their sense of sight.
3. Ask students*: “Which of these items should I remove before storing this box away for next year?”* Have students turn to a partner and share their ideas with each other.
4. Select students to share with the whole class what they discussed. Prompt students to explain their thinking further. Ask: *“Why do you think that? What would happen if I didn’t remove the plant? What would happen if I left the rock?”*
5. Challenge students to debate reasoning if their opinions differ about what can and cannot stay. Ask students to justify their reasons with evidence from their observations.
6. Sort the items into two groups: those that students agree can stay in the box for storage and those that students think should be removed.
7. Have students re-examine the items in each group and invite then to share what they notice about the items that can stay in the container and the ones that cannot. Ask students to use their observations and not just name the objects. Ask: “*What did you notice that is the same about the items we said we needed to remove? What do you notice about the items that can stay?*

|  |  |
| --- | --- |
| Cannot Store | Can Store |
| It will not be able to breath | It does not need to breath |

1. Tell students that they will be sorting picture cards. Explain to students that these pictures will be sorted by the same rule to the one they used to sort the objects for storage.
2. Model by choosing one card at a time and discuss as a class if they think the object in the picture could or could not be kept stored in the closed box over the summer. Ask students to justify their reasons. (Hula hoops, string or pocket chart may be used for sorting.)
3. Introduce the class chart by saying: “*This is called a T-chart and that scientists sometimes use them to record their thinking. We are going to use it today.*”
4. Circulate as the students sort the picture cards and explain their reasoning and thinking within the large group, listen for examples of quality thinking.
5. Gather students as a class and have student volunteers share how they decided which group to put items. Prompt students to give reasons why items can or cannot survive being stored in the box. (Example: *“It will not be able to breath”*) Accept and record (Write Aloud) all answers. If students volunteer the terms “living and not living” add them to the chart but do not introduce the terms yet.
6. Tell the students that they are going to draw and label (Independent Writing) an example in their science notebook of something that they might have at home that they could store in a box for the summer (or other long period of time) and something that would not survive being stored in a closed box. Say, “*As scientists we are going to draw an object that can survive in a box and label it yes and then draw an object that can not survive and label it no. You can also write the name of the object nearby. Watch me date, add the page number and draw and label in my notebook*.”
7. Circulate and ask student to describe their example and explain their reasons. While observing notice those labeling with the objects name or the words yes and no. Stop and show class good examples of what their friends are writing. Encourage students to add details and labels to their diagrams.

**Explain**

**Activity 2 – Characteristics of Living Things**

**Purpose**

To identify the characteristics of living things and non-living things

**Activity Description**

Students examine three examples of a plant- one living, one plastic and one dead. They will decide which can be considered a living thing and why. As a class they will create a class anchor chart for the criteria they will use to decide if something is or is not alive.

**Focus Question**

How do scientists decide if something is living or non-living?

**Duration**

One class session

**Materials**

* Science notebooks
* What’s Alive, Kathleen Weidner Zoehfeld
* Youtube video-Classic Sesame Street - Ernie dresses a snowman

https://www.youtube.com/watch?v=XIldmjGQ-SIHealthy Plant

* Healthy Plant
* Dead Plant
* Plastic Plant
* Science Vocabulary chart entitled Unit 3 Basic Needs of Living Things
* Living/Nonliving Smart Board sort (optional)
* *Note to Parent* homework
* BBC School Science clips –Plants and animals in the local environment -optional <http://www.bbc.co.uk/schools/scienceclips/ages/6_7/plants_animals_env.shtml>
* *Snowman Template*

**Teacher Preparation**

1. Review read aloud book and decide stopping points for introducing characteristics of living things. Do not necessarily read the entire book to the class. It can be revisited later in the unit.
2. Preview YouTube videos to make sure they are still available and not blocked

**Classroom Procedure**

1. Connect the previous day’s activity to today’s work by revisiting the class chart on the characteristics of objects that can and cannot be stored in a box over the summer and the card sort that was done. Tell students that some of the cards represented Living things and some represented Non-living things and that today they will learn more about the difference between the two.
2. Show students the three plant examples: Living, Dead and Plastic. Ask students to describe how the three are alike and different.
3. Read aloud What’s Alive, Kathleen Weidner Zoehfeld and begin to make a class anchor chart of the characteristics of Living and Non-Living things. Include examples from the book as well as examples from their earlier sorting experience (see example.
4. Explain to students that some things that were once alive are no longer living because they do not match some or all of the characteristics on the anchor chart.
5. Have students compare their observations of the three plants to the characteristics on the class anchor chart. Ask them how they can tell which one of the plants is alive.

|  |  |
| --- | --- |
| Living | Non-Living |
| Can grow  Will respond to touch  Breaths | Does not move on its own |

1. As a class watch YouTube video: *Sesame Street Ernie Dresses a Snowman.* Have students turn to a partner and share how they would explain to Ernie that the snowman is not alive. Invite a few students to share their thoughts.
2. Give students a copy of the *Snowman Template*. Direct students to individually complete the sentence stem. (Independent Writing.)
3. Circulate as students are writing and provide support as needed. Identify quality example to share at the next session. (Direct students to add completed template to their science notebooks.)
4. Give students the *Note to Parent* homework and explain the expectations.

Note to Parents

Dear Parent or Guardian,

Our class is learning about living things. For homework tonight, students have been asked to notice and observe living things. They were also asked to bring a picture of one living thing and one non-living thing to class tomorrow. The pictures can be drawings, magazine pictures, photos, or computer generated graphics. Thank you in advance for your help with this assignment.

Sincerely,

Note to Parents

Dear Parent or Guardian,

Our class is learning about living things. For homework tonight, students have been asked to notice and observe living things. They were also asked to bring a picture of one living thing and one non-living thing to class tomorrow. The pictures can be drawings, magazine pictures, photos, or computer generated graphics. Thank you in advance for your help with this assignment.

Sincerely,

Note to Parents

Dear Parent or Guardian,

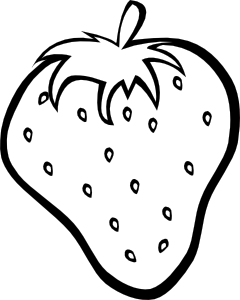
Our class is learning about living things. For homework tonight, students have been asked to notice and observe living things. They were also asked to bring a picture of one living thing and one non-living thing to class tomorrow. The pictures can be drawings, magazine pictures, photos, or computer generated graphics. Thank you in advance for your help with this assignment.

Sincerely,

Is It Living?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Draw a picture of each item below | Does it need Food? | Does it need Water? | Does it need Air? | Does it Change and Grow? |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Name:

[](http://www.google.com/url?sa=i&rct=j&q=&esrc=s&frm=1&source=images&cd=&cad=rja&docid=L6G1snFGrv5EqM&tbnid=raAHWtL5vmrHaM:&ved=0CAUQjRw&url=http://www.clker.com/clipart-13227.html&ei=la3dUsfoBsmAogS4jIKACQ&psig=AFQjCNH1kn6iusw7Jm-ohq8dOw9rnxghiw&ust=1390345907729444)

|  |  |  |
| --- | --- | --- |
| car_c | mitten_c | umbrella_c |
| robot_c | tree_c | DJI_Critter_bird2_c |
| DJI_Critter_boy2_c | DJI_Critter_flowerwoodsie_c | DJI_Critter_bear2_c |

**Elaborate**

**Activity 3 – Living and Non-Living Things**

**Purpose**

To sort examples into living and non-living categories

**Activity Description**

Students will review the criteria for living and non-living things they generated. As a class they will practice using these criteria to sort examples into the two categories. They will then collaboratively apply these criteria to create a sorted collage of living and non-living pictures.

**Focus Question**

How do scientists communicate the difference between living and non-loving things to others?

**Duration**

One-class sessions

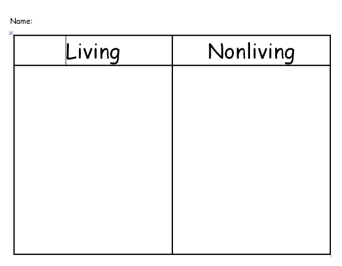
**Materials**

* *Is it Living* PowerPoint
* Smart board photos (optional)
* Science notebooks
* Magazine for each team of two students
* Scissors
* Glue sticks
* Crayons/Markers
* Constuction paper (1 per team of two)
* Homework from previous session

**Teacher Preparation**

1. Remind students to have their homework from the last science session
2. Collect a variety of magazine with examples of living and non-living objects

**Classroom Procedure**

1. Make a connection to the last session having selected students with quality examples to read aloud the sentence they wrote to Ernie about why the snowman is not alive.
2. Invite student volunteers to share the examples of living and non-living things they brought from home. Prompt students to explain how they decided which of their examples are alive and not alive.
3. Use the *Is it Living* PowerPoint of photos and/or Smart board photos to check for understanding of the difference between living and non-living objects. Show students a one photo at a time and ask them to vote (thumbs up or down) for whether the object in the photo is alive. Select students from the group to support their decision. (Use this as an opportunity to reteach as needed.)
4. Tell students today they are share what they know by making a living/nonliving chart. Explain that they will be cutting out magazine pictures and gluing them on the appropriate side of the paper.
5. Give each team of two students a piece of construction paper and direct them to fold it in half. Have them write “Living” at the top of one side and “Non-Living” (Guided Writing) at the top of the other side (see example.)
6. Model for students how to select a picture and use the characteristics on the class anchor chart to decide which side of their chart to paste the example.
7. Also model for the students how to label the picture with its name by stretching the word slowly and writing the letters that they hear. Say, “*As scientists we add labels to help us communicate with others.”*
8. Circulate as students are working and check for understanding by asking individuals how they decided which side of the chart to put their picture. Also look for children doing great labeling (Independent Writing). Share quality examples with class and use as opportunity for mid-lesson instruction.
9. When students are finished post the finished products and celebrate by having student describe and explain their work to the class.

|  |  |
| --- | --- |
| Living | Nonliving |
|  |  |

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Engage**

**Activity 4– What are Needs?**

**Purpose**

To distinguish between basic survival “needs” of human beings and things not essential for life (“wants”)

**Activity Description**

Students will brainstorm what they need to live. They will decide if the items they listed represent things they need to survive or just things they want to have to be happy. They will categorize the needs they listed as examples of food, water, air or shelter, adding items that are missing from their brainstormed listed if necessary.

**Focus Question**

How do scientists decide what people need to be healthy and to grow?

**Duration**

One class session

**Materials**

* Needs and Wants Class T-Chart
* *Needs or Wants* pictures sheet
* Scissors
* Crayons
* Science Notebook

**Teacher Preparation**

1. Make a class t-chart to collect student ideas about what they need to survive.
2. Make copies of Needs or Wants pictures for each student

**Classroom Procedure**

1. Connection: Introduce lesson by reviewing the living and non-living activity posters. Ask students if they saw any examples of children on the living side of the charts (if there are none, ask class where they would have pasted a picture of themselves on their charts).
2. Ask students “*What do you need to stay healthy and grow?* Accept all examples.As students respond, ask: “*Could you survive without this example?”* Explain that as scientists, we identify something as a need or want by whether it helps us stay alive.
3. As students decide on whether each item they name is a need or want record the items on the appropriate side of the class chart (Need or Want.). Prompt students to explain why they think each example goes on the side selected (Do not introduce food, water, shelter and air as categories at this time. Accept terms if offered by students.)
4. Say, “*Now we are going to be scientists and use our sense of sight to look at pictures of Needs and Wants*.” Give students a copy of the *Needs and Wants* picture sheet. Name the pictures together so that everyone has a clear understanding of what they are (example: picture of bubbles represents air.)
5. Instruct and model how to write “N” or the word “Need” on the pictures of examples they think they need to survive and to X out the things they do not need to survive. Ask them to think about the why they need the examples they selected to survive while they work.
6. Circulate as they are working and ask students how the object they labeled as a need will help them survive.
7. Direct students to cut out the pictures they identified as “Needs” and to sort them into groups on their table. Have students select one group of needs, glue the set selected into their notebooks on the next numbered page and have students decide on a label to describe what need the set of pictures represents.

Are these Needs or Wants? Which do I need them to survive?



**Explore**

**Activity 5– Investigating Earthworms**

**Purpose**

To investigate what an animal needs to survive.

**Activity Description**

Students compare the characteristics of a model earthworm to a real, living earthworm. They will describe what their real earthworm needs to survive. The will use their observations as evidence to support their claim about which sample is alive and not alive.

**Focus Question**

How do scientists decide what animals need to be healthy and to grow?

**Duration**

Two class session

**Materials:**

* *What do Animals Eat* video

<http://dptv.pbslearningmedia.org/resource/tdc02.sci.life.colt.eat/what-do-animals-eat/>

* *Investigating Earthworms* record sheet (one per student)
* Masking tape
* Chart paper

Per Student

* Science journals
* Crayons or markers
* Per Student Group
* 2 clear plastic cups – 9 oz.
* 2 paper plates
* Paper towel (not brown, school variety)
* ¼ cup chocolate cookie or graham cracker crumbs
* Candy “gummy” worm
* Hand lens
* Live earthworms (can be obtained from bait shops or pet stores)

**Teacher Preparation**

1. Preview *What do Animals Eat* video to make sure it available and not blocked
2. Set out a gallon container of tap water overnight in order to eliminate the chlorine from the water
3. Pour the prepared water into the spray bottles and cups (about 50 ml / cup)
4. Place each live earthworm in a separate clear plastic cup (one per student group.) Cover the worms with ¼ cup of damp (not wet) soil
5. Prepare an earthworm “model” per group by putting one candy “gummy” worm in clear plastic cup and covering it with chocolate cookie crumbs to simulate soil

**Classroom Procedure:**

1. Connection: *“Boys and girls as scientists we have been learning abou*t what we need to grow and stay healthy. *Scientists watch animals very carefully to learn about their needs. We will do this today but because it is hard to bring all kinds of animals into the classroom, we will start to investigate what animals need to live and grow by watching a video*. Direct students to look for the following while they are watching:

*What are the animals eating*?

*Where are the animals living*?

*What else are the animals doing to survive*?

1. Introduce next activity by telling students that as scientists they are going to investigate an earthworm. Ask students to share what they know about earthworms (accept all answers.)
2. Give each student a cup prepared in advance with gummy worm and cookie crumb soil (an earthworm model) a hand lens, paper plate. Explain that sometimes scientists use models of real things to help them learn.
3. Direct students to put their model worms on the paper plate and to examine them carefully using their senses (not taste.)
4. Circulate and ask students to describe their model worms: *What color is your worm? How can you tell the top of your worm from the bottom? Does your worm have eyes? Mouth? Nose? Legs? How does it smell? How does it feel? How does it move?*
5. Give each student a copy of the *Earthworm Investigation* recording sheet. Direct students to draw their worm and to use arrows to label (Independent Writing) the worm’s parts in the picture box. They should use other descriptive words (letters or phrases) on the lines below their drawing (as appropriate at their level) on the lines below their drawing to describe what they observe about their worm.
6. Show students a cup containing a real worm and model for them how to gently and safely handle and care for the worm during their investigation. Explain that the real earthworms have soft bodies that have to be kept moist all the time, especially when they are not in the moist soil. Model how to dip the worm into the cup of water (de-chlorinated water prepared earlier) to wash off the soil and to moisten the worm. Remind students that we will wash our hands at the end of the activity.
7. Give each student a cup with a live worm and soil and a paper plate. Provide each table with a cup of de-chlorinated water. Have student moisten a piece of paper towel with a few drops of water from the cup. Direct students to gently rinse off their worm in the water and place it on the paper towel covered paper plate to observe. Remind students to keep moistening their worms with the water if the towel dries out.
8. Circulate and encourage students to use all of their senses (except taste) to carefully observe their worms. Ask: *What color is your worm? How can you tell the top of your worm from the bottom? Does your worm have eyes? Mouth? Nose? Legs? How does it smell? How does it feel? How does it move?*
9. After students have completed their observations have them revisit the *Earthworm Investigation* recording sheet and draw their real worm and to use arrows to label (Independent Writing) the worm’s parts in the picture box. Direct students to once again add words on the lines below their drawing to describe other things that they observed about their worm.
10. Staple and fold the *Earth Worm Investigation* sheets into the students’ science notebook.
11. Collect the earthworms and other materials and gather students as a whole group. Ask student volunteers to share some of their observations with the class. Ask students: *“In what ways are the two worms you observed alike? Different?”*  Make a large class chart or Venn diagram to collect student’s response.
12. Review the class chart on characteristics of living and non-living things and ask: *Are the worms you were observing alive or not alive? What evidence do you have to support your claims?* Record student explanations on the class chart, modeling how to support each claim stated with evidence (Shared Writing.)

*Claim: We think the gummy worm is not alive. Evidence: The model worm did not move and it did not respond to when it was touched*

*Claim: We think the other worm is alive. Evidence: It wiggled around on the plate and it moved when it was touched*

**Note: Store the earthworms in a container of damp (not wet) soil until the next session. Keep them out of direct sun.**

**Investigating Earthworms**

**My Model Earthworm:**

Draw and label a picture of your model earthworm:

I observed…

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Investigating Earthworms**

**My Real Earthworm:**

Draw and label a picture of your real earthworm:

I observed…

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

To Survive Animals Need…

Choose one animal and show using pictures and/or words what it needs to survive.

My Animal is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| Food | Water | Shelter | Air |
|  |  |  |  |

****

**Explain**

**Activity 6–Animals’ Needs**

**Purpose**

To describe what animals need to survive.

**Activity Description**

Students will describe animals (pets) that they have in their homes or other family members might have. They will discuss what they think each example needs to be healthy and to grow. After comparing this to what they learned investigating earthworms, the class and teacher together (Interactive Writing) will create an - anchor chart of what all living things need to survive. They will compare their list with observations of video taped animals in nature.

**Focus Question**

How do scientists explain what animals need to stay healthy and grow?

**Duration**

One class session

**Materials**

* Animal Needs- <http://youtu.be/Pe9kSlVeEIM>
* *Needs of an Animal* Song

<https://www.youtube.com/watch?v=k4UDf3tF_O4>

* *Beaver* video (or other video or book describing how an animal meets its needs) video

<http://dptv.pbslearningmedia.org/resource/tdc02.sci.life.colt.beaver/beavers/>

* Chart Paper
* Science Notebook
* Crayons or Markers
* Velcro – small pieces for attaching items to song chart

**Teacher Preparation**

1. Review *Animal Needs* video to make sure that it is available and not blocked.
2. Review *Needs of an Animal* Song and create a chart copying the song as presented. Add the title and create removable pictures of the 4 animal needs to be used interactively with the chart. Laminate pieces and add Velcro to make them removable. .
3. Preview Beaver video (or other resource on animal needs) for places to start, stop and discuss

**Classroom Procedure**

1. Connection: *“We have been learning about living and nonliving things. Many of you take care of living things in your homes. What are some examples of living things that you keep healthy and growing in your homes*? (pets, houseplants, baby siblings.)
2. Make a list of the living things that students have in their homes. Encourage students to include themselves as an example of a living thing in their home that has needs for survival.
3. Have them think about these examples as they brainstorm a list of what living things need to stay alive. Ask: *“How does this list compare to the things that you need to grow and stay healthy? How does this compare to what your earthworms might need to live and be healthy in a earthworm home? What are some things that you think all living things seem to need?”* (Food, water, air, place to live)
4. Play *Needs of an Animal* song for students. Repeat and have students sing along with the *Needs of Living Things* chart allowing for student interaction when adding the Velcro pieces in the appropriate places.
5. Tell students that they are going to watch a video of an animal and look for examples of how the animal meets its four needs. Show class the *Beaver* video (or other resource illustrating an animal’s life in its habitat) and remind students to look closely for examples of how the animal gets its food, water, air and shelter.
6. Have students share what they observed in the video as a class. Revisit the list of things that pets in their homes need and categorize the list according to the four needs.
7. On chart paper write What Animals Need to Surviveat the top. Select a different example of animal and whole group model how they will be completing their own example of what an animal they select would need to survive. Indicate the food the animal eats, where it would likely find water, shelter and be sure to add that the animal needs air to survive. (Teacher may need to repeat with several animals as examples.) **Save chart for future lesson.**
8. Have students to select their own favorite animal. Tell them to draw a labeled diagram of the animal on the next page of their notebook. Tell students to list, using picture and/or words, what their animal would need to survive. Circulate and ask students to explain their illustrations and labels. Invite students to share completed notebook entries with a partner and/or the whole group.

**Elaborate**

**Activity 7– Earthworm Homes**

**Purpose**

To design an animal home that provides all of the animals survival needs

**Activity Description**

Students collaboratively use their understanding of animal survival needs to design and build a home for keeping their real earthworm alive and healthy.

**Focus Question**

How do scientists decide how to keep an animal alive and healthy?

**Duration**

One class session (plus addition days for observations)

**Materials:**

* Science notebooks
* *What do Animals Eat* video

<http://dptv.pbslearningmedia.org/resource/tdc02.sci.life.colt.eat/what-do-animals-eat/>

* Investigating Earthworms record sheet (one per student)
* Duct tape
* *Worms* by Ann Heinrichs
* *An Earthworm’s* Life by John Himmelman
* *Chart paper, markers*
* Live earthworms (from previous lesson)

Per Student Group

* 3 cups of potting soil
* 2 sheets of black construction paper
* ½ cup of crumbled dried leaves or shredded newspaper
* ½ cup of oatmeal
* ½ cup of sand
* ½ cup of used coffee grounds
* 2 liter clean plastic soft drink bottles 1- per students (with labels removed, with top cut off and duct tape covering rough edges.)
* 16 oz. plastic soft drink bottle (one per student)
* Plastic tray
* Re-sealable gallon size plastic bag (for soil)
* Spray bottle de-chlorinated water (see directions below
* Cup of de-chlorinated water (about 50 ml per cup)

**Teacher Preparation**

* Prepare additional de-chlorinated water as needed
* Preview the *Earthworm Home Construction* video *and Earthworm Home Sample* photos found in unit resources (this is not for student use but to help teachers make a model and provide guidance)
* Cut ¼ off of each 2-liter plastic bottle. Use duct tape to cover the sharp edges
* Prepare 1 plastic bag per group of potting soil (2 cups) and 1 plastic bag of sand (1/2 cup) per group
* Review procedure for making an earthworm home and decide on the best method for distributing the needed materials and providing directions (all materials on one tray per group, distribute materials as needed for each step, etc.)

**Classroom Procedure**

1. Explain to students that today they will be making a home for their earthworms that will provide everything that they need to survive. Ask students: *What do earthworms need to live and be healthy?* Review the difference between the living and non-living model worms.
2. Read aloud selected pages from Worms by Ann Heinrichs (pgs. 5, 10, 17, 26.) Pause as reading to ask: *Where do earthworms find their food? What do they eat? Where do earthworms find their water? How do earthworms get air? Why is soil such an important home for earthworms?*
3. Demonstrate for students the steps in building their earthworm home. Have steps listed on a chart or have students do each step as it is being modeled. (Video of procedure and sample photos provided with resources for teacher use only: Video: *Earthworm Home Construction*; Photo: *Earthworm Home Sample*)

Step 1: Add the bag of sand into the 2 liter pop bottle (with top previously removed)

Step 2: Fill small, 16 oz. plastic bottle with sand or water and place (with the cap on) at the bottom, center of the 2 liter bottle

Step 3: Add the bag of soil on top of the sand and around the 16 oz. pop bottle

Step 4: Cover the soil with a thin layer of uncooked oatmeal

Step 5: Cover the oatmeal with a thin layer of used coffee grounds

Step 6: Carefully place the worms on top of the coffee grounds

Step 7: Gently spray the worms and the coffee layer with water

Step 8: Cover the coffee layer and worm with crushed leaves

1. After students finish assembling their earthworm home have them wrap it in black paper. Label each with appropriate student names. Explain to students that they will be carefully taking off the black paper and observing their earthworm home and recording their observations in their notebooks every day they are in science class.
2. Conclude lesson by reading aloud *An Earthworm’s Life* by John Himmelman. Point out examples of how an earthworm's needs for survival are being met during the stages of its life. Explain to students that after they have finished their investigation they will also be writing a book about their earthworms so they need to keep very careful records of what they learn by observing their earthworm home over the next few weeks.

**Note: Plan when to have students remove the black paper and record their observations of their worms during every science session for the rest of the unit.**

* The recording should include the date, page number, a picture of their earthworm home and labels with descriptive words or phrases. If available, have students also record their observations with digital photos.
* Make sure there are enough days in between data collection that there are noticeable changes.
* Encourage students to take notice of worm behavior and changes in the earthworm home contents.
* Be sure that students monitor the moisture level in their earthworm home regularly and add only de-chlorinated water from the spray bottle when need to keep the soil moist (not wet – do not let students over water.)
* Remind students to recover their earthworm home with the black paper after each observation session.

**Explore**

**Activity 8 – Investigating Plants**

**Purpose**

To plan and conduct investigations into the basic needs of plants.

**Activity Description**

In this activity students will plan an investigation that will test what happens when plants are grown without light. They will collect observation data onto a class chart and collectively write a scientific explanation for the role that light has in plant growth and survival.

**Focus Question**

How do scientists investigate the way plants get the food energy they need to survive?

**Duration**

One class session (then ongoing observations throughout unit)

**Suggestions/Resources:**

**Materials**

* Small plants (two of the same plant per group of students or two of the same larger plants for the whole class to investigate)
* Chart paper, markers
* Paper bags or boxes for creating a dark place to put group’s plants in

Do plants need light to grow and be healthy?

Our Question:

What We Know:

Our Plan:

* *Plant Investigation* data recording form (Copy back to back for more comparisons)
* Science Notebooks

**Teacher Preparation**

1. Locate a place where sets of plants can be kept without light and with light. A box or a paper bag with small holes for air can be used to block the light from one of the plant sets.
2. Make a class chart for planning an investigation titled with the question, “*Do plants need light to grow and be healthy?”*  (See example)
3. Make copies of *Plant Investigation* worksheet (per team or student)

**Classroom Procedure**

1. Connection: Say: *“We have learned that animals need water, food, air and shelter to survive. We also know that the food they get for energy is very important and helps them to survive. Some animals get their energy by eating plants. Where do you think plants get the energy they need to survive?”* (Accept all answers at this point.)
2. Explain that animals need to eat for energy; plants don't eat but they still need energy. Ask: *"Where do plants get energy?”* Accept all answers.
3. Tell students that they are going to design and conduct an experiment that will help them learn more about how plants get their energy to survive since they cannot eat food like animals do.
4. Show students the plants that you have grown from seed or cuttings. Tell them that they will be doing a fair test to find out what happens if one plant gets energy from the sun and one plant does not. Using the prepared Investigation Planning class chart, read the question aloud together: *Do plants need light to grow and be healthy*?
5. Ask students what they already know about what plants need to grow healthy and survive. List these ideas on the class investigation chart. Tell students that in order to test whether or not plants get their energy from the sun, one plant will be put in the light and one in the dark. Ask students what else will need to be done to make sure that this will be a fair test (*water the plants the same, make sure that both get air, make sure that both have the same amount and type of space to grow – same soil, temperature, etc.)* Include student ideas on “plan” section of class investigation chart. Suggest missing ideas (variable to control) if students do not offer them.
6. Have students draw and label a prediction what they think a plant that grows in the light and a plant that grows in the dark will look like after time in their student notebooks. Use Have students write Light at the top of the page on the left and No Light on the top of the page on the right (using Guided Writing.) Tell students that they think about how they a plant might look that grows in light and then draw a picture of that plant on the left side under the word “Light.” Repeat for the “No Light” example. Have students turn and talk to a partner about what they predicted. (Remind students that all predictions are acceptable.)
7. Set aside a time every few days for students to observe the plants and to record their initial observations on their Plant Investigation data recording form (draw what they see and add appropriate labels.) Give students more pages as needed or have them continue their observations on the backs of the pages provided.
8. After students have made enough observations to see a difference in the two plants collaboratively write a scientific explanation on the class chart (Claim – Evidence.)

*Example:*

**Claim:** *We think that plants get their energy to grow and be healthy from the sun.* **Evidence:** *In our investigation the plant in the sun was tall and green. The one in the dark was limp and yellow and looked like it was going to die.*

**Note:** Allow time for students to make and record daily plant observations in their science journals.

Plant Investigation: How Do Plant’s Get Their Energy?

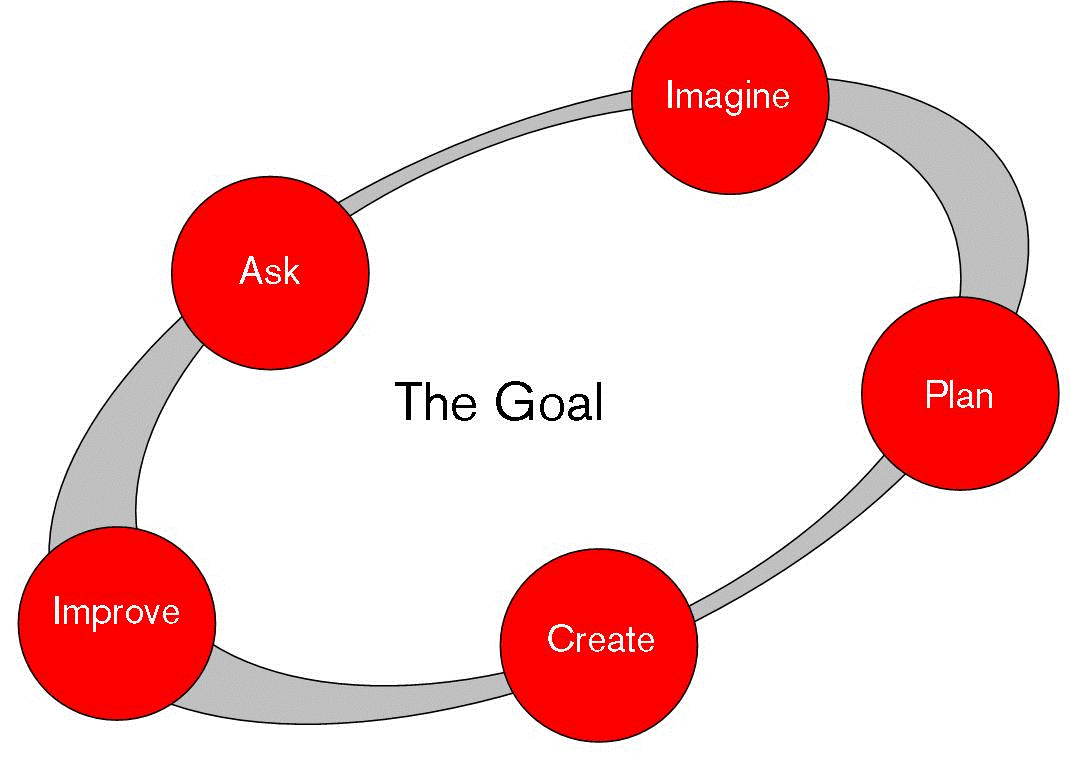
|  |  |  |
| --- | --- | --- |
| Day | With Light | No Light |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Elaborate**

**Activity 9 – Zoo Habitat Model**

**Purpose**

To apply the concepts of what living things need to survive.



**Activity Description**

As environmental engineers, students construct a model for new exhibit at for the zoo for an animal of their choice. Students will incorporate living and nonliving elements necessary for their animal to survive.

**Focus Question**

How do scientists apply what they know when designing a space where for animals can live, grow and be healthy?

**Duration**

2-3 class sessions

**Materials**

* *Letter from the Zoo*
* Collection of zoo animal books for students to use to research if needed
* *Zoo Model Planning sheet*
* Construction materials such as paper, glue, clay, pipe cleaners, felt, sticks, tin foil, pom-poms, shoeboxes, etc.

**Teacher Preparation**

1. Send a letter/note home requesting each student to bring in a shoebox (Optional: Do this as part of the beginning of unit letter).
2. Gather various supplies for students to use to create the habitats (Optional: Generate a list of supplies and also add to a parent letter introducing the unit and important science vocabulary).
3. Create or request a Letter from the Zoo that sets the purpose for building a model habitat. The letter should state there is a new area of the zoo opening up and the zoo is asking the students to design/redesign a habitat for animals.
4. Print a planning sheet for each student

**Classroom Procedure**

Day 1

1. Introduce this project by reading the *Letter from the Zoo*. Say: *“As scientists and as engineers you will use what you have learned about animals to design a model of a zoo environment that will supply what your animal will need to survive, grow and be healthy.”*
2. Give students a copy of the *Zoo Model Planning Sheet*. Show students a diagram of the engineering design process and review the steps included (these steps were introduced and explained in the Push and Pull Unit.) Make connections between the design process diagram and the planning sheet.
3. Show students the available model construction materials and reference books before they begin their design process. Model for students how to use diagrams, labels words to complete the parts of their plan.
4. Explain to students the criteria for the project: *Be able to explain (orally) how their zoo habitat model will provide air, water, shelter and food (an energy source) - for their targeted animal and which of these materials are living and non-living components.*
5. Students will begin the design process by imagining and drawing what the model habitat will look like on the planning sheet.

Day 2 (3)

1. Make a connection to the lesson purpose, criteria for success and process being use. Model for students how to orally explain the process they are using and the way they are meeting animal needs in their design when they talk to their partner and when they will later present to the class. (*Class, I chose a lion as my animal. In my model I am using clay to show the shelter my animal will have when it is too hot.*)
2. Have students rehearse/practice explaining their design by talking to a partner.
3. Circulate as students are working and ask them to orally explain where they are in the design process and the purpose for the parts of their model. Say: “*What will your animal eat?” Where will your animal get water? How are you showing this?”*
4. When finished have each student individually introduce their animal to class and explain what it needs to survive. Encourage classmates to ask questions about anything they don’t understand that is presented.



Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ On the Farm or At the Zoo

Draw a picture of a farm or zoo animal and what it will need to survive.

****

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Zoo Diorama Planning Sheet

Animal Habitat

Materials Needed:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Zoo Diorama Procedure Sheet

1. Imagine: Think of the habitat for an imaginary animal and draw it on your planning sheet.
2. Plan: Think of the materials needed, use words and pictures to make your list.
3. Create: Follow the plan you create by gathering materials and assemble your diorama.
4. Check: To see if your animal has everything it needs to survive. Air, water, food and a place to live.
5. Ask: Is there anything I can do to improve my design?
6. Improve: If needed.

**Explain/Elaborate**

**Activity 10 – Plants and Animals are Living Things**

**Purpose**

To compare how plants and animals meet their need for energy, water, shelter and air

**Activity Description**

Students review what animals need to survive, grow and stay healthy. They use information from their plant investigation results and reference sources to generate a list of what plants need to survive, grow and stay healthy. They then compare how plants and animals meet their survival need for food (energy) water, air and shelter.

**Focus Question**

How do scientists compare how plant and animal survival needs?

**Duration**

One class session

**Materials**

* Science Journals or other documents with plant and earthworm home observations
* What Animals Need to Surviveclass chart (from previous lesson)
* What Plants Need to Survive class chart (from previous lesson)
* *Needs of Living Things –*Power point
* *What’s Alive* by Kathleen Zoehfeld
* Harry Kindergarten-*The Needs of a Plant* (song for kids) https://www.youtube.com/watch?v=kkqETB7Xc5g
* BBC School Science clips –growing plants <http://www.bbc.co.uk/schools/scienceclips/ages/5_6/growing_plants.shtml>
* Optional: Interactive lesson- *Time 4 Learning Basic Needs* video <http://www.time4learning.com/_swf/demos/childu/12science_basic_needs.html>

**Teacher Preparation**

* Review how to BBC School Science clips –growing plants <http://www.bbc.co.uk/schools/scienceclips/ages/5_6/growing_plants.shtml>
* Preview *The Needs of Living Things –*PowerPoint to decide when to stop for class discussion
* Preview *Harry Kindergarten-The Needs of a Plant* song to make sure it is not blocked.
* Prepare a class anchor chart for theWhat Plants Need to Survivesimilar to the one prepared with the *Needs of Animal song* in Activity 4
* Preview *The Needs of Living Things –*PowerPoint to identify when to stop for class discussion

**Classroom Procedure**

1. Connection: Say: *“You have all done a wonderful job using what you know about animal needs to build your Zoo Habitat models. Let’s compare our models again with what scientists say about keeping animals alive and healthy.”*
2. Review what animals need to grow and stay alive by re-reading *What's Alive* by Kathleen Zoehfeld. Stop during the reading to have students compare the information in the book with what the class has recorded on the anchor chart: “What Animals Need to Survive”. Say: “Now we are now going to use what we have learned in our investigations and in books written by scientist make a similar chart about plants.” Create a “What Plants Need to Survive” class anchor chart.
3. Read aloud The Carrot Seed by Ruth Krauss and ask students why everyone is telling the little boy the carrot won't grow. Have students explain how the little boy knows that one day a carrot will come up. Ask: *“What does he know about plants and how to take care of his carrot plant? How does this compare to what you have learned? Can you give the little boy some advice?”*
4. Have student revisit their results from Investigating Plants activity. Ask student what they learned about the needs of plants from their investigation (Accept all ideas.) Ask how this compares to what the little boy in *The Carrot Seed* learned. Begin to collect student ideas about what plants need to survive, grow and stay healthy.
5. As a class listen to the Harry Kindergarten*-The Needs of a Plant* song. Sing the song together as a class, using the anchor chart as a guide and support. Add missing information and/or correct misconceptions about plant needs to “What Plants Need to Survive “class anchor chart.
6. Use the BBC School Science Growing Plants – Plant Grower simulation to have students predict what will happen to the baby plant if water is not added or if the shade is pulled and there is no sun. Then run the simulation to test their predictions.

<http://www.bbc.co.uk/schools/scienceclips/ages/5_6/growing_plants.shtml>

1. Repeat the simulation several times using both water and sunlight, water and no sunlight and sunlight and no water. Compare student predictions with the results.
2. Use *The Needs of Living Things* PowerPoint slides to compare plants and animals as types of living things.
3. After completing the whole class discussion model with students (using your notebook) how to date, number and label two pages. Label one page “Alike” and one page “Different”. Have students use their science notebooks to think and draw a recording of one way that plants and animals needs are the same and one way that plant and animal needs are different. Encourage them to label parts of their illustrations to further explain their thinking.

**Evaluate**

**Activity 12 – Teaching Others About Living Things**

**Purpose**

To write an “All About Book” that teaches peers about a living thing and what it needs to survive

**Activity Description**

Students will use their science notebooks and class anchor charts to write an All About Book on a favorite living thing (the plants they investigated, their Earthworm, plants they have at home or a pet they have at home). They will read their books aloud to a partner that chose a different living thing to write about.

**Focus Question**

How do scientists communicate what they know about what living thing need to survive?

**Duration**

Two class sessions

**Materials**

* Science Journals or other documents with plant and earthworm home observations
* What Animals Need to Surviveclass chart (from previous lesson)
* What Plants Need to Survive class chart (from previous lesson)
* *Mentor Text (book about a plant or animal that can be used as a model text)*
* *“All About Living Things”* book template

**Teacher Preparation**

* Make copies of template for each student. Make extra copies.
* Review and select a “Mentor Text” that illustrates features students should be working on at this stage of their writing (labeling, titles, etc.)

**Classroom Procedure**

Day 1

1. Connection: Show students plant and animal anchor charts. Say: “*We have been learning about the basic needs of plants and animals”* Invite students to share the similarities and difference they noticed and recorded in their science notebooks *(if necessary direct student attention to the similar needs of energy source (food or sun), water, air, and shelter on both charts.)*
2. Explain that many scientists write books to teach others what they have learned from their investigations and studies. Say, “*We are scientists and we have learned a lot so we will also be an author and write an All About book to teach others about what animals or plants need to survive*.
3. Tell students they can choose to write about the plants that they investigated (light and dark comparison) or about the animal they investigated (their earthworms.) Tell students that each book will have 5 pages and that they can decide what important information they would like to teach others about their plant or animal.
4. Give students time to talk with a partner about what they would like to write about in their book. Circulate as they are talking and ask individuals to describe what they want to say in their book.
5. Give each student a book template and model for students how they should set up, begin and complete their book.
6. Allow time for students to complete the cover and to work on the next few pages
7. Circulate as students are writing, reminding them to include information about what their living thing needs to survive.

Day 2

1. Review the procedure for this All About Book activity
2. Distribute books for children to finish.
3. Circulate, reminding students to include important information about survival needs.
4. Use student examples to share good thinking with others.
5. When students are finished, pair them with someone that has a different topic for partner reading.
6. Celebrate them as scientists and authors.

All About Living

Things

Written by:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

All About Living Things

Written by:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Science Scope on Atlas Rubicon Curriculum Manager:** http://oaklandk12.rubiconatlas.org/public/

**Oakland Schools:** http://www.oakland.k12.mi.us/