unit 1

Introduction to Plants and Animals
MySci Project-Based Curriculum
Unit Structure

Unit 1
Introduction to Plants and Animals

Visit the Unit 1 Curriculum Page for more resources: http://schoolpartnership.wustl.edu/instructional-materials/mysci-unit-01-introduction-plants-animals/

DESIGN CHALLENGE: What do we need to know in order to take good care of our pets?

section 1
What is an organism?
lesson 1
Is it living?

section 2
What is a plant?
lesson 2
How do seeds become plants?

section 3
What is an animal?
lesson 3
How are plants alike and different?

section 4
Why do humans need other animals?
lesson 4
What makes animals different from plants?

lesson 5
How are animals alike and different?

lesson 6
How are insects alike and different?

lesson 7
Why are animals important to us?

lesson 8
What do we need to know in order to take good care of our pets?
# Unit 1 Teacher Preparation List

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Inside MySci kit, you’ll find:</th>
<th>Items you must supply:</th>
<th>Extra prep time needed:</th>
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</thead>
</table>
| **Lesson 1** | 6 sets of 18 cards  
What’s Alive?, by Kathleen Weidner Zoehfleld | Science notebooks & internet access  
Chart Paper | Review MySci Safety Guidelines  
Copy and administer the pre-assessment  
Copies of Is it Living? Activity sheet (Appendix i)  
Copies of Class Exploration chart (Appendix ii-iii)  
Make chart or Venn diagram of Living vs. Not Living (Save for Lesson 4) |
| **Lesson 2** | 6 biofact bags containing: feather, shell, bone, acorn, Lima bean, sunflower seed, rock, penny, marble, paper clip, nail, pompom  
Cards from Lesson 1  
How a Seed Grows, Helen Jordan  
Grow light  
Seed Starting kit with soil, water tray, etc.  
30 radish seeds  
6 sunflower seed, Lima bean (for demonstration)  
Spray bottle  
Hand lenses | Science notebooks & internet access  
Chart Paper  
Warm water | In this lesson, student will germinate and grow different plants. The process will take from 1 week to a month. The students will take care of their plants as they do more lessons.  
Copies of Plant Needs Assessment sheet (Appendix iv) |
| **Lesson 3** | 6 sets of pictures of different plants | Science notebooks & internet access  
Chart Paper  
Extra books, videos, live plants or pictures about plants if taking a walk outside is not feasible. | Copies of Plant Parts Poster (Appendix v) |
| **Lesson 4** | Cards from Lesson 1 with the non-living cards removed | Living vs. Non-Living chart from Lesson 1  
Scissors  
Science notebooks & internet access  
Chart Paper | Copies of Plants and Animals Chart (Appendix vi) |
| **Lesson 5** | 6 biofact bags from Lesson 2  
Animal Classes DVD  
6 bags of plastic animals; 1 bird, 1 fish, 1 frog, 1 snake, 1 mammal | Science notebooks  
Cards from Lesson 1 | Copies of What Animal Am I? riddle (Appendix vii) |
| **Lesson 6** | 6 bags of 12 Invertebrate models containing:  
Beetle, Dragonfly, Grasshopper, Fly, Bee, Worker Ant  
Butterfly, Caterpillar, Spider1, Spider 2, Crab, Scorpion | Science notebooks | Copies of Insect poster (Appendix viii) |
| **Lesson 7** | | Science notebooks & internet access | |
| **Lesson 8** | What Do Pets Need?, by Ellie Roper  
Cards from Lesson 1 | Stuffed animal  
Science notebooks & internet access  
Chart Paper | Copies of Pet Needs Report (Appendix ix)  
Copy and administer post-assessment |
What is an organism?

Lesson 1: Is it living?

LEARNING TARGETS
Identify characteristics of living things, including the ability to change and the need for air, water, and food.

SUMMARY
Students will use observations to determine and describe what is living.

ENGAGE
Ask the class: How do we know if something is living? Ask them for their reasoning and record. Save their responses for later. Pass out copies of the Is it Living? worksheet (Appendix i) and have the students circle the objects that are living and put an X on those that are not. Collect and save these.

EXPLORE
Divide the students into small groups. Give each group a set of cards and ask them to sort them into 2 piles; living and non-living. Ask the students to discuss their reasoning for their choices. Hold a class discussion on their choices.

One way of doing this would be to hold up each card and ask the groups if they thought the object was living or non-living. Make tally marks under each card. Another way of doing it could be for the teacher to hold up a card and have the students physically move to the corresponding corner, ie: alive and not alive.

Record their choices for the Explain section of this lesson.

EXPLAIN
Read What’s Alive up to page 11. Either using a flipchart or the cards from the Explore section, review how do we know if it’s living using examples from the teaching tip.

Finish reading the rest of the book. After page 13 be sure to add to the chart they started in the Engage section that all living things grow.

ELABORATE
Show and discuss: watch the Sesame Street video on what is alive:

https://www.youtube.com/watch?v=8r3jAZRk1CQ&list=PL-OJZ2hunTL3nkYjOH_HmAT-GoqEtbDv&index=1

MYSCI MATERIALS:
6 sets of 18 cards
What’s Alive?, by Kathleen Weidner Zoehnfeld

TEACHER PROVIDES:
2 copies each of Is it Living? worksheet (Appendix i)
Copies of Class Exploration worksheet (Appendix ii-iii)
Chart paper
Science notebooks & Internet Access

Teaching Tip:
This lesson will take several days or sessions. Engage (1 session); Explore (1 session); Explain (1 session); and Elaborate and Evaluate (1 session)

Teaching Tip:
For the Engage section, here is an example of a possible conversation to have with students.

How do we know if something is living?
• It has a face.
• It grows
• It can move
• It talks
• It has a heart.
• They have ears.
• They have hands.
• It breathes.
• Needs food and water.

Teaching Tip:
When reading for the Explain section, make sure to discuss that ALL plants and animals are living things.
Lesson 1 continued: Is it living?

Then, explain to the class they are going on a hunt to look for living objects. (Ideally, you would take them outside for this activity. If the weather doesn’t permit, have them look out the window or, if you have plants or class pets in the classroom, they could record those objects as well.) The students will record their findings on the Class Exploration worksheet (Appendix ii-iii). Pass the worksheets out to the class, and show them where they will draw the objects they find. When everyone is finished, use the same process you did with their charts, to come to consensus on which items they found are living.

EVALUATE

☑ Pass out a new Is it Living? worksheet (Appendix i) and have the students fill it out again. You may choose to show the students their pre-assessment to compare with their post, or just keep them for your own records.

Teaching Tip:

When doing the Class Exploration, make sure students are pointing out plants as well as animals.

It is important to note that checking the first three boxes will show students that the item is living and that whether the fourth box is checked will distinguished if it’s an animal or plant.
Lesson 2: How do seeds become plants?

LEARNING TARGET
Identify the needs of a plant, including water and light.

SUMMARY
Students will explore different kinds of seeds. They will successfully set up growing labs, using their knowledge of what plants need to grow.

ENGAGE
Divide the class into small groups. Pass out the Biofact bags. Ask them to sort them into 2 groups, things that will grow and things that won't. Have the students use the hands lenses to examine the objects closely. Have a discussion about their choices, recording their choices on a tally sheet.

EXPLORE
Using the choices the students made on what will grow from the biofact bag, tell the students that we will try growing them. Ask them what plants need to grow. (Elicit the answers soil, water and sunshine through questions like “What else?”) Plant whatever the top three choices of the students are, even if they are not correct.

Demonstrate how to plant the lima bean, sunflower seed and what ever else they choose.

Then tell the students they are also going to plant another kind of seed. Give each student a radish seed to examine. The students will watch the teacher set up the seed starter, adding the warm water to expand the soil pellets. Have the student place the radish seeds on the top of the pellet. Each student could give their pellet two squirts from the spray bottle.

EXPLAIN
Read and discuss How a Seed Grows. As a further extension, students could look for and bring seeds that they find at home. Ask them where they think they might find seeds, such as in fruit, in their spice racks in the pantry or from their yards. Some examples of seeds they could find are apple, strawberry, orange seeds from fruit and pepper, coriander, etc. When students bring in the seeds, they could try growing those as well.
**Lesson 2 continued: How do seeds become plants?**

**ELABORATE**
How long do you think it will take until the seed begins to grow? Make a chart of their predictions. (Radishes take about 2 weeks to sprout, but then finish growing in another 2 weeks.)

Ask: **“What do you think would happened if we don’t water the plants? Or put a plant in the dark? Or put one in the freezer?”**

Review with the students what plants need to grow, (air, water, food, sunlight.)

Watch the [Needs of a Plant video](https://www.youtube.com/watch?v=kkqETB7Xc5g) on youtube:

**EVALUATE**

- Pass out and administer the What a Plant Needs assessment (Appendix iv).
Lesson 3: How are plants alike and different?

LEARNING TARGET
Identify the parts of a plant, including stem, leaf, root, and flower.

SUMMARY
Students notice the similarities and differences of plants in different environments through cards.

ENGAGE
Have students draw a picture of a plant in their science notebook and share with a neighbor. Ask: Is your plant exactly like your neighbors? How is it different? How is it the same?
Put the students in groups and pass out the plant cards and discuss similarities and differences.

EXPLORE
Ask: What do all plants have in common? Come up with common parts such as leaves, stems, and roots. Pass out the Plant Parts Poster (Appendix v), and discuss. Have the students go back to the picture of the plant they drew in the Engage section. Did you draw the leaves, stems, and roots? If not go back and add those, or draw a new picture. Be sure and label the leaves, stem and root. If it has a flower or fruit, add that too.

EXPLAIN

ELABORATE
Walk around the schoolyard and neighborhood looking for different plants. If the weather does not permit, look for other pictures, videos, or books about plants in different environments.

EVALUATE
Pass out the plant cards to small groups again. Ask: Can you find leaves, stem, and roots on the plant cards? What else do some of the plants have? (seeds, flowers and fruit). What do all plants need to live? (Sun, soil, water and air)

MYSCI MATERIALS:
6 sets of pictures of different plants

TEACHER PROVIDES:
Copies of Plant Parts Poster (Appendix v)
Extra books, videos, live plants or pictures about plants if taking a walk outside is not feasible
Internet access
Chart paper
Science notebooks

Teaching Tip:
For the Explore section, teachers can bring in live plants or more pictures for students to explore as well.
Lesson 4: What makes animals different from plants?

LEARNING TARGET
Compare and contrast what plants and animals need to survive.

SUMMARY
Students will use plant and animal cards to find similarities and differences among plants and animals.

ENGAGE
Use the cards from Lesson 1. Ask students to sort the cards into plant and animal groups. Discuss reasoning why they sorted the way they did.

EXPLORE
Go back to the Living vs. Non-Living chart from Lesson 1. Review what the students had originally said about living things, like they move and eat and grow. Make a new Venn diagram of plant and animal needs and parts. Here is an example:

- **Animals** - Find and eat their food, need air, move around on own, need shelter
- **Plants** - Make their own food, need carbon dioxide from air, use energy from sun, do not move around on their own, most have green leaves
- **Both** - Need food, need water, grow, need space

EXPLAIN
What makes an animal different from a plant? Let's look at our cards again. Pick on animal card and one plant card. What do they have that is different? (They have different parts.)

Show the Food Chain Song video: https://www.youtube.com/watch?v=ttpNGJcpJ68

Make a T-chart of Plant parts and Animal Parts. Then make a chart of what they do.

ELABORATE
Hold up the baby card. Ask: *Is this a plant or animal? Does a baby need air, water, does it grow? Humans are animals too, what do we have in common with all the animals?*

Then compare the baby to the kitten, fish, turtle, etc., discussing parts and what the animals do.
Lesson 4 continued: What makes animals different from plants?

EVALUATE

Pass out the Plants and Animals Chart (Appendix vi) and scissors. Explain to the students that they are going to cut out each sentence strip and put it under one of the columns: Plants, Animals or Both.

Teaching Tip:
The sentence strips are numbered in order for the teacher to help identify which statement is being discussed.
Lesson 5: How are animals alike and different?

LEARNING TARGET
Classify animals such as mammals, reptiles, amphibians, birds, and fish according to their physical structures.

SUMMARY
Using models, students compare different structures of different animals, and discuss classification of animals.

ENGAGE
Let’s go back to the biofact bags. This time let’s sort the things that come from plants and what comes from animals. Leave the things that don’t belong to either group in the bags. What do you think the bone or feather or shell might come from? (bird, animal, snail, etc.) Collect the biofact bags.

EXPLORE
Put students in small groups and pass out animal model bags. Have students carefully look at each animal model and notice the different parts of the animals. Ask: Does it have feet? Does it have wings? Now that we have looked at each model of an animal, are there any that are similar? How can you group these? (by number of legs, colors, etc.)

EXPLAIN
Have students watch the Animal DVD. This DVD is 16 minutes long and introduces classification. Scientists have given special names to some groups of animals depending on what they have or do. The names of those groups are: mammals, reptiles, amphibians, birds, fish. Can you find and name each one?

ELABORATE
What animal category would a worm belong? What about insects? They have their own group called “invertebrates”.

EVALUATE
Pass out the What Animal Am I? riddle (Appendix vii). Explain to the students that they will create a riddle describing its parts, color, size, where it lives, number of legs, wings, fins, sound it makes, or other things for other students try to guess the animal.

MYSCI MATERIALS:
6 biofact bags from Lesson 2
Animal class DVD
6 bags of 6 animal models: turtle, worm, frog, fish, bird, mammal

TEACHER PROVIDES:
Copies of What Animal Am I? riddle (Appendix vii)
Science notebooks
Lesson 6: How are insects alike and different?

LEARNING TARGET
Identify the parts of an insect, including head, thorax, abdomen, and antennae.

SUMMARY
Using models, the students discover that insects follow a body pattern that is different than other invertebrates.

ENGAGE
Ask: Are insects animals? How do we know? Review what animals have and do: move on their own, eat plants or other animals, make noises, have legs, arms, eyes, etc.

EXPLORE
Tell the students that they are going to become entomologists—scientists that study insects.

Start with the Insect Poster (Appendix viii) and explain to the students that insects have six legs, three body parts, and two antennae. We call this the 6-3-2 rule. Use the poster to highlight each. Explain that while each insect is a little different, these characteristics stay the same. Some heads are smaller than others. Sometimes the thorax and abdomen look like they are the same part. Tell the students they have to look closely.

EXPLAIN
With the students in their groups, explain that they will be working again with their model sets of invertebrates. Tell the students they will be classifying these invertebrates into two categories—insects and non-insects. Review the 6-3-2 rule with the students. Have them look at each invertebrate, count legs on each, examine body parts, and look for antennae. Sometimes the antennae may be small, but they are there. Once they have fully examined all invertebrates, they should put them into two groups—insects or not insects. Encourage them to work together to make their decision. Be certain to move around the room to assess their progress and ask questions.

ELABORATE
Lead a sing along to the tune of Head, Shoulders, Knees, And Toes:

Head and thorax, abdomen, ABDOMEN!!
Head and thorax, abdomen, ABDOMEN!!
Six jointed legs, antennae, and some wings,
Head and thorax, abdomen, ABDOMEN!!

EVALUATE
Have students draw an insect and label its parts using the 6-3-2 rule in their science notebooks.

MYSCI MATERIALS:
6 bags of 12 Invertebrate models containing: Beetle, Dragonfly, Grasshopper, Fly, Bee, Worker Ant, Butterfly, Caterpillar, Spider1, Spider 2, Crab, Scorpion

TEACHER PROVIDES:
Insect Poster (Appendix viii) for the teacher to project for discussion
Science notebooks
Why do humans need other animals?

Lesson 7: Why are animals important to us?

LEARNING TARGET
Identify food products that come from plants and animals.

SUMMARY
Students discover and explore ways animals are an important part of our lives.

ENGAGE
Ask: *What is your favorite food? Does any of that food come from animals?*
Discuss with students how food is a basic need that all animals need to stay alive. Talk about how we eat animals, i.e., hamburgers, fish, chicken. Ask: *What foods do different animals eat?*
Watch and discuss the "What Do Animals Eat?" video from pbskids: http://www.pbslearningmedia.org/resource/tdc02.sci.life.colt.eat/what-do-animals-eat/

EXPLORE
We are going to play a game where you choose what different animals eat. Each corner of the room is a different kind of food: corner 1: plants-grass, berries, corner 2: fish, corner 3: insects, corner 4: mouse
Show students a picture of an animal or say an animal from the pbs video) and ask students to move to the corresponding corner. Then show an animal with more than 1 possibility like an omnivore, (raccoon), and then add people.

EXPLAIN
How do animals fit in the food chain? Watch the following video: https://www.youtube.com/watch?v=OZOvqYppOuo
Refer back to the game they played and talk about which students went where. Pick specific students and ask them to talk about why they chose the food they chose. Why were there 2 possibilities with the raccoon, or human? Introduce “carnivore, herbivore and omnivore”, “meat eater, plant eater and eater of both.” Record discussion on chart paper or flipchart.

ELABORATE
What other ways do animals help us?
http://video.nationalgeographic.com/video/dog_domestic_working
https://www.youtube.com/watch?v=GpBxTpi91HI

EVALUATE
What did you say your favorite food was? Draw a picture of it and draw a picture in your science notebook where it came from, either a plant or an animal (not the store!).

TEACHER PROVIDES:
Internet access
Science notebooks
Lesson 8: What do we need to know in order to take good care of our pets?

LEARNING TARGET
Demonstrate that all living organisms have basic needs which need to be met in order to survive.

SUMMARY
Students explore and identify the basic needs of pets.

ENGAGE
Ask: How do animals help humans besides providing food? What other uses do we have for animals? (seeing eye dog, horses to ride, sled dogs, police dogs, etc) Watch this video: https://www.youtube.com/watch?v=zbiz3zpkkxE

Ask: Does anyone have a dog or cat for a pet? Here is my pet. Show the stuffed animal. Is it living? Display the pictures from Lesson 1, asking if it is alive or not alive. Go back to anchor chart to review how we know if it’s living.

EXPLORE
Pass out the cards from Lesson 1, and ask students to sort living and nonliving. Split students into groups, and have them sort. Discuss why they chose to classify each picture as living or nonliving. Go back to anchor chart to review how we know if it’s living.

EXPLAIN
Read What Do Pets Need? by Ellie Roper. Discuss how animals, especially their pets need food, water, and air to live and that we can also observe cats, dogs, and fish using food and water, taking in air, growing, moving, responding, reproducing and eliminating waste. Discuss differences between domesticated and wild animals and how each survive.

ELABORATE
Ask students to review, “What do animals need to live?” Refer to anchor chart from Lesson 1. Lead students in a discussion of the suggestions. Distribute Pet Needs Report (Appendix ix). Complete one report together as a class with a more complicated animal such as a snake or iguana.

EVALUATE
Have each student complete a Pet Needs Report independently with a different animal.

Step 1. Ask students to name different types of pets as you list them on the board.
Step 2. Instruct the students to choose one pet and talk about things they would provide for the pet. Have them choose two of these things and then label and illustrate each one.
Step 3. Have each student share his or her drawing with the class. Then, have the student decide whether each picture illustrates something the pet must have or something the pet would like to have.
Step 4. Once all the students have posted their drawings, guide students to see that the “must have” illustrations might include food, water and shelter. Label or circle those parts of the illustrations.

MYSCI MATERIALS:
What Do Pets Need?, by Ellie Roper
Cards from Lesson 1

TEACHER PROVIDES:
Copies of Pet Needs Report (Appendix ix)
Stuffed Animals
Internet access
Science notebooks
Chart paper

Teaching Tip:
Depending on the individual classroom, the teacher needs to decide what is appropriate for the research part of this lesson. Whether to work in groups, alone, with teacher guidance, as homework will need to be determined.

Teaching Tip:
Here is some background knowledge for the Pet Needs Report: In order to survive, all animals must have four basic needs met. Each one needs food, water, air, and a place to live. Each type of animal meets its needs differently.

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Here is some background knowledge for the Pet Needs Report: In order to survive, all animals must have four basic needs met. Each one needs food, water, air, and a place to live. Each type of animal meets its needs differently.
### Key to Understanding the NGSS Codes

**NGSS codes begin with the grade level, then the “Disciplinary Core Idea code”, then a standard number. The Disciplinary Core Ideas are:**

**Physical Sciences**
- PS1: Matter and its interactions
- PS2: Motion and stability: Forces and interactions
- PS3: Energy
- PS4: Waves and their applications in technologies for information transfer

**Life Sciences**
- LS1: From molecules to organisms: Structures and processes
- LS2: Ecosystems: Interactions, energy, and dynamics
- LS3: Heredity: Inheritance and variation of traits
- LS4: Biological evolution: Unity and diversity

**Earth and Space Sciences**
- ESS1: Earth’s place in the universe
- ESS2: Earth’s systems
- ESS3: Earth and human activity

**Engineering, Technology, and Applications of Science**
- ETS1: Engineering design
- ETS2: Links among engineering, technology, science, and society

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**NEXT GENERATION SCIENCE STANDARDS**

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<thead>
<tr>
<th>NGSS PERFORMANCE EXPECTATIONS</th>
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<tbody>
<tr>
<td><strong>K-LS1-1.</strong> Use observations to describe patterns of what plants and animals (including humans) need to survive.</td>
</tr>
<tr>
<td><strong>K-ESS3-1</strong> Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.</td>
</tr>
<tr>
<td><strong>K-ESS3-3</strong> Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</td>
</tr>
<tr>
<td><strong>K-2-ETS1-1</strong> Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</td>
</tr>
<tr>
<td><strong>K-2-ETS1-2</strong> Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</td>
</tr>
<tr>
<td><strong>K-2-ETS1-3</strong> Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.</td>
</tr>
</tbody>
</table>

For more information, visit [http://www.nextgenscience.org/next-generation-science-standards](http://www.nextgenscience.org/next-generation-science-standards)
Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help plants meet their needs for food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them meet their needs for food, water and air.

Concepts

Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them meet their needs for food, water and air.

PLANNING AND CARRYING OUT INVESTIGATIONS

With guidance, plan and conduct an investigation in collaboration with peers (for K).

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.
- Evaluate different ways of observing and/or measuring a phenomenon to determine which way can answer a question.
- Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons.
- Make observations (firsthand or from media) and/or measurements of a proposed object or tool to determine if it solves a problem or meets a goal.
- Make predictions based on prior experiences.

ANALYZING AND INTERPRETING DATA

- Record information (observations, thoughts, and ideas).
- Use and share pictures, drawings, and/or writings of observations.
- Use observations (firsthand or from media) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.

DISCIPLINARY CORE IDEAS

Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment

- Organization for Matter and Energy Flow in Organisms

All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)

- Biogeology

Plants and animals can change their environment. (K-ESS2-2)

ESS3.A: Natural Resources

- Natural Resources

Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)

- Developing Possible Solutions

Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (Secondary to K-ESS3-3)

Structure, Function, and Information Processing

- Structure and Function

All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)

- Information Processing

Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. (1-LS1-1)

CROSSCUTTING CONCEPTS

Patterns

- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence

Cause and Effect: Mechanism and Prediction

- Events have causes that generate observable patterns.
- Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Systems and System Models

- Objects and organisms can be described in terms of their parts.
- Systems in the natural and designed world have parts that work together.

Scale, Proportion, and Quantity

- Relative scales allow objects and events to be compared and described (e.g., bigger and smaller; hotter and colder; faster and slower).
- Standard units are used to measure length.

Structure and Function

- The shape and stability of structures of natural and designed objects are related to their function(s).

Stability and Change

- Some things stay the same while other things change.
### Key to Understanding the GLE Codes

GLE codes are a mixture of numbers and letters, in this order: Strand, Big Idea, Concept, Grade Level and GLE Code.

The most important is the strand. The strands are:

1. **ME**: Properties and Principles of Matter and Energy
2. **FM**: Properties and Principles of Force and Motion
3. **LO**: Characteristics and Interactions of Living Organisms
4. **EC**: Changes in Ecosystems and Interactions of Organisms with their Environments
5. **ES**: Processes and Interactions of the Earth’s Systems (Geosphere, Atmosphere and Hydrosphere)
6. **UN**: Composition and Structure of the Universe and the Motion of the Objects Within It
7. **IN**: Scientific Inquiry
8. **ST**: Impact of Science, Technology and Human Activity

For more information, visit [http://dese.mo.gov/college-career-readiness/curriculum/science](http://dese.mo.gov/college-career-readiness/curriculum/science)

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### GLE Standards

**Kindergarten**

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<thead>
<tr>
<th>Concept</th>
<th>LO</th>
<th>D</th>
<th>K</th>
<th>a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe and compare the structures and behaviors of different kinds of plants and animals</td>
<td>LO</td>
<td>3</td>
<td>D</td>
<td>K</td>
</tr>
<tr>
<td>Identify that living things have offspring based on the organisms’ physical similarities and differences</td>
<td>EC</td>
<td>1</td>
<td>A</td>
<td>K</td>
</tr>
<tr>
<td>Describe how the seasons affect the behavior of plants and animals</td>
<td>IN</td>
<td>1</td>
<td>A</td>
<td>K</td>
</tr>
<tr>
<td>Pose questions about objects, materials, organisms and events in the environment</td>
<td>IN</td>
<td>1</td>
<td>A</td>
<td>K</td>
</tr>
<tr>
<td>Conduct a simple investigation (fair test) to answer a question</td>
<td>IN</td>
<td>1</td>
<td>B</td>
<td>K</td>
</tr>
<tr>
<td>Make qualitative observations using the five senses</td>
<td>IN</td>
<td>1</td>
<td>B</td>
<td>K</td>
</tr>
<tr>
<td>Make observations using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers)</td>
<td>IN</td>
<td>1</td>
<td>B</td>
<td>K</td>
</tr>
<tr>
<td>Measure length and mass using non-standard units</td>
<td>IN</td>
<td>1</td>
<td>B</td>
<td>K</td>
</tr>
<tr>
<td>Compare amounts/measurements</td>
<td>IN</td>
<td>1</td>
<td>C</td>
<td>K</td>
</tr>
<tr>
<td>Use observations as support for reasonable explanations</td>
<td>IN</td>
<td>1</td>
<td>C</td>
<td>K</td>
</tr>
<tr>
<td>Use observations to describe relationships and patterns and to make predictions to be tested</td>
<td>IN</td>
<td>1</td>
<td>C</td>
<td>K</td>
</tr>
<tr>
<td>Compare explanations with prior knowledge</td>
<td>IN</td>
<td>1</td>
<td>D</td>
<td>K</td>
</tr>
<tr>
<td>Communicate observations using words, pictures, and numbers</td>
<td>ST</td>
<td>1</td>
<td>A</td>
<td>K</td>
</tr>
<tr>
<td>Observe and identify that some objects occur in nature (natural objects); others have been designed and made by people</td>
<td>ST</td>
<td>1</td>
<td>B</td>
<td>K</td>
</tr>
<tr>
<td>Describe how tools have helped scientists make better observations (i.e., magnifiers)</td>
<td>ST</td>
<td>3</td>
<td>A</td>
<td>K</td>
</tr>
<tr>
<td>Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or nonfiction of individuals solving everyday problems or learning through discovery)</td>
<td>ST</td>
<td>3</td>
<td>A</td>
<td>K</td>
</tr>
<tr>
<td>Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member</td>
<td>ST</td>
<td>3</td>
<td>A</td>
<td>K</td>
</tr>
</tbody>
</table>
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Unit 1 (version 11.24.15) | Introduction to Plants and Animals
Washington University in St. Louis Institute for School Partnership
Is it Living?
Section 1, Lesson 1

NAME ____________________________

DIRECTIONS
Circle the objects that are living and put an X on those that are not.

source: Adapted from Page Keeley
# Class Exploration Chart (sample)

## Section 1, Lesson 1

**NAME**

**DIRECTIONS**
Draw objects that you think are living. Check the boxes to see if each is living.

<table>
<thead>
<tr>
<th>DRAW THE OBJECT BELOW</th>
<th>DOES IT NEED FOOD OR WATER?</th>
<th>DOES IT GROW AND CHANGE?</th>
<th>DOES IT NEED AIR (BREATHE)?</th>
<th>DOES IT MOVE ALL BY ITSELF?</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Raccoon" /></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><img src="image" alt="Basket" /></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Tree" /></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Book" /></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

![Checkmark](image)
Class Exploration Chart

Section 1, Lesson 1

**NAME**

---

**DIRECTIONS**

Draw 3 objects that you think are living. Check the boxes to see if each is living.

<table>
<thead>
<tr>
<th>DRAW THE OBJECT BELOW</th>
<th>DOES IT MOVE ALL BY ITSELF?</th>
<th>DOES IT GROW AND CHANGE?</th>
<th>DOES IT NEED AIR (BREATHE)?</th>
<th>DOES IT NEED FOOD OR WATER?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
# What a Plant Needs

## Section 2, Lesson 2

**NAME**

**DIRECTIONS**
Draw a picture of one basic plant need in each box. Write the need below the picture.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
LABEL THE FOLLOWING:

- stem
- root
- leaf
- flower
- fruit
# Plants and Animals Chart

## Section 3, Lesson 4

**NAME**

**DIRECTIONS**
Cut out the words below, and put them where they belong on the chart.

<table>
<thead>
<tr>
<th>ANIMALS</th>
<th>PLANTS</th>
<th>BOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WORD BANK:**

<table>
<thead>
<tr>
<th>1. Need shelter</th>
<th>2. Can move on their own</th>
<th>3. Are usually green</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Come from seeds</td>
<td>5. Need air</td>
<td>6. Make their own food from the sun</td>
</tr>
</tbody>
</table>
What Animal Am I?

Section 3, Lesson 5

NAME ________________________________

DIRECTIONS
Fill in the blanks to create a riddle.

I have____________________ legs.

I am this color: ____________________________.

My skin is (scaly) (furry) (smooth).

I am (bigger) (smaller) than my hand.

I live in ________________________________.

I like to eat ________________________________.

I move by ________________________________.

Here is the sound I make.
Insect Poster
Section 3, Lesson 6

- antennae
- legs
- wings

- head
- thorax
- abdomen
Pet Needs Report
Section 4, Lesson 8

NAME ____________________________________________

DIRECTIONS
Choose which animal will be your pet, and give it a name. Draw your animal below.

My pet’s name is ____________________________________________

My pet is a ____________________________________________

( dog, cat, fish, bird )

Here is my pet and what it needs to survive: ( water, food, tank, cage, bed )
Vocabulary Words

All Sections and Lessons

RECOMMENDATION
We recommend that students participate in investigations as they learn vocabulary, that it is introduced as they come across the concept. MySci students work collaboratively and interact with others about science content also increasing vocabulary. The hands-on activities offer students written, oral, graphic, and kinesthetic opportunities to use scientific vocabulary and should not be taught in isolation.

- organism
- energy
- living
- non-living
- seeds
- sprouts
- soil
- leaves
- stem
- flowers
- roots
- fruit
- mammals
- reptiles
- amphibians
- birds
- fish
- invertebrate
- insects
- antennae
- thorax
- abdomen
- carnivore
- omnivore
- herbivore