

STEM Learning Module Template

PISA Team:

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Strand(s): Living Things

Grade(s): 3-5

Key Science Terms: life cycle, predator, prey, food chain, producer, consumer, adaptations, pollinations, survival, environment, habitat, chemical defenses, reproduction, immune systems, functions, living systems, indigenous, raptors, taxonomy, classification, coniferous, organisms, deciduous, urban, pod cast, Venn diagram

Key Science Concepts:

- Living things have parts / functions
- Living things vs. non living things
- All living things have a life cycle
- All living things adapt to their environment
- Plants and animals are dependent on each other
- Plants and animals have defenses / immune systems in order to survive

NJCCC Standards:

STANDARD 5.5 (Characteristics of Life) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.

A. Matter, Energy, and Organization in Living Systems

Recognize that plants and animals are composed of different parts performing different functions and working together for the well being of the organism.

5E's	Procedure	Assessment Attach all assessments	Materials/Handouts Attach all handouts
<p>Engage</p> <p>Week: <u>1</u></p>	<p>Key Questions:</p> <ol style="list-style-type: none"> 1. How do we know that something is living? 2. Do/How their parts help them to survive? <p>Key Concepts:</p> <ol style="list-style-type: none"> 1. Living things breath, eat, eliminate waste, and reproduce 2. Plants have roots, stems, leaves, and seeds. 	<ol style="list-style-type: none"> 1. Students will demonstrate their prior knowledge with their illustrations. 2. Students will identify living things using the worksheet. 	<ol style="list-style-type: none"> 1. "Talking Drawings" worksheet. (Dr. D. Eldridge) 2. Students will list 5 objects and use "Classify Living and Nonliving Things" chart to distinguish

Procedure:

1. Students are asked to close their eyes and visualize a living thing and illustrate their idea.
2. Students will individually "show and tell" their illustrations and explain and support their ideas.
3. Students will label a plant diagram using "The Life Cycle of Plants" website.
http://www.bbc.co.uk/schools/scienceclips/ages/9_10/life_cycles.shtml
http://www2.bgfl.org/bgfl2/custom/resources_ftp/client_ftp/k_s2/science/plants_pt2/index.htm
4. Students will take a walk to a local park on a scavenger hunt and collect evidence of living things.

characteristics. (B. Mitsakos)

Explore

Week:
2-4

Key Questions:

1. How do living things adapt to their environment?
2. What are some characteristics of birds?
3. How are flowers pollinated?
4. How are membranes used?

Key Concepts:

1. All living things adapt to their environment.
2. Pigeons have adapted to city living.
3. Owls are raptors and predators.
4. Taxonomy is a way to classify living things.
5. Birds help pollinate flowers.
6. Frogs have membranes.

1. Demonstrate knowledge using KWL chart, dichotomous key, tally chart, bar graphs, and EIE worksheets.

1. KWL chart (teacher made)
 2. dichotomous key worksheet on birds (<http://pelotes.jea.com>)
 3. "Pigeon Watch" chart and Tally Sheet.
www.birds.cornell.edu (Cornell University)
 4. "Poppy," by
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Procedure:

1. Students fill in KWL chart with the K and W sections.
2. Students will use taxonomy to identify and classify birds. www.birds.cornell.edu
3. Students will complete dichotomous key worksheet on birds.
4. Students will identify body parts of birds that help pollinate flowers.
5. Students will use EIE unit on the development of a hand pollinator.
6. Students will preview various types of pigeons on Cornell site. www.birds.cornell.edu/
7. Students will participate in urban bird study. Field trip to a local park to record types of pigeons using identification sheets. Return to classroom to analyze data and create a tally chart of findings which will be used to create a bar graph – www.nces.ed.gov/
8. Students will report findings on-line on the specific Cornell University web site.
9. Teacher will read a segment of "Poppy" by Avi and discuss.
10. Students will dissect owl pellets and use the identification chart to label specific articles found inside the pellet. Students will also use dichotomous key to assist them in the identification process.
11. Students will use EIE unit to understand the basic principles of membranes.

- Avi
5. Identification chart on owl pellets. (Hawks, Owls, and Wildlife Sanctuary)
 6. Hand Pollinator kit. (www.ciese.org/eofnj/)

Explain

Week:
5-8

Key Questions:

1. What role have pigeons played throughout history?
2. What birds are indigenous to Hudson County?
3. How do birds help to pollinate plants?

1. Complete questionnaires and worksheets.

1. Computer Lab
2. EIE worksheets - (www.ciese.org/eofnj/)

4. What is the purpose of a membrane?

Key Concepts:

1. Pigeons live in cities because they have adapted to their surroundings.
2. Owls and pigeons are indigenous to urban areas.
3. Birds are a catalyst in the pollination process.
4. Membranes help organisms survive.

Procedure:

1. Students will listen to "Ode to a Pigeon" pod cast on Science Friday site. www.sciencefriday.com
2. Students will complete questionnaire in response to pod cast.
3. Students will complete a story board of one urban bird.
4. Students use "The Great Plant Escape" website – www.urbanext.uiuc.edu/ to illustrate and label parts of a flower and describe pollination process in a structured paragraph using Microsoft word.
5. Students will listen to "The Frog Swan Song" pod cast on Science Friday site.
6. Students will complete questionnaire in response to pod cast.
7. Students will present their findings of the EIE activity on membranes.

3. Questionnaire worksheets

4. pigeon pod cast

www.sciencefriday.com/kids/sfkc-20050617-2.html)

5. frog pod cast -

www.sciencefriday.com/kids/sfkc20060113-1.html

Elaborate

Key Questions:

Week: 1. What is life like for a pigeon?

1. Complete Venn

1. "Don't Let the Pigeon Drive

<u>9-10</u>	<ol style="list-style-type: none"> 2. How are pigeons and owls similar and different? 3. What are other things in nature that help pollinate plants? 4. How do membranes help humans? <p>Key Concepts:</p> <ol style="list-style-type: none"> 1. Pigeons are scavengers. 2. Some birds are predators. 3. Insects and birds pollinate birds. 4. Skin is a protective membrane for humans. 	<p>diagram and write comparative summary.</p> <ol style="list-style-type: none"> 2. Students will write their own narrative writing sample. 	<p>the Bus” by Mo Willems. (www.Mowillems.com)</p> <ol style="list-style-type: none"> 2. Journals 3. Computer Lab – Kidspiration and Microsoft Word
	<p>Procedure:</p> <ol style="list-style-type: none"> 1. Read “Don’t Let the Pigeon Drive the Bus,” by Mo Willems. 2. Students will begin to compose a story entitled “A day In the Life of a Pigeon.” 3. Students will complete a Venn diagram to compare and contrast the pigeon and the owl using Kidspiration. Students will present their diagrams to the class. Students will summarize their findings in paragraph form using Microsoft Word. 4. Students will observe how insects pollinate plants. They will use the “Plant Life Cycle” website as an interactive activity. http://www2.bgfl.org/bgfl2/custom/resources ftp/client ftp/ks2/science/plants_pt2/index.htm 		
Evaluate	<p>Procedure:</p> <ol style="list-style-type: none"> 1. Give the students a post test. 2. Assessment tests on pollinators and membranes. 	<ol style="list-style-type: none"> 1. Students will complete PowerPoint 	<ol style="list-style-type: none"> 1. Post Test from each individual EIE

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3. Write the directions in proper sequence on how to create a hand pollinator using the engineering process through a Microsoft PowerPoint presentation.

presentation and demonstrate real world connections and acquired knowledge.

- unit.
(www.ciese.org/eofnj/)
2. Computer Lab
 3. Assessment tests
(www.ciese.org/eofnj/)

Timeline: Create a timeline for this project.

(This unit will be completed using collaborative team teaching strategies.)

Week 1 – Engage unit

Weeks 2-4 – Explore unit

Weeks 5-8 – Explain unit

Weeks 9-10 – Elaborate unit

Weeks 11-12 – Evaluate unit

Sources:

- "The Life Cycle of Plants" http://www.bbc.co.uk/schools/scienceclips/ages/9_10/life_cycles.shtml
http://www2.bgfl.org/bgfl2/custom/resources_ftp/client_ftp/ks2/science/plants_pt2/index.htm
 - Dichotomous Key - (<http://pelotes.jea.com>)
 - Pigeon Watch and Urban Birds Project - www.birds.cornell.edu
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- Create A Graph www.nces.ed.gov/
 - Hand Pollinator Kit and EIE worksheets and assessments www.ciese.org/eofnj/
 - "The Great Plant Escape" – www.urbanext.uiuc.edu/
 - Pigeon Pod cast www.sciencefriday.com/kids/sfkc-20050617-2.html
 - Frog Pod cast - www.sciencefriday.com/kids/sfkc20060113-1.html
 - "Don't Let the Pigeon Drive the Bus" www.Mowillems.com
 - Plant Life Cycle" http://www2.bgfl.org/bgfl2/custom/resources_ftp/client_ftp/ks2/science/plants_pt2/index.htm
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