

“Eggs”ploration

Major Topic and SOL	Habitats, Sustainability
Science SOL	K.7 a-d, K.1 a,g,h,k
Math SOL	K.2 a-c, K.3, K.6, K.8, K.10, K.14, K.15, K.17; 1.5
C/T	K-2.1 – K-2.7

Length of Unit 4 – 5 weeks

Major Understanding

- The natural habitat’s impact on an egg’s fragility and durability
- Humans have a responsibility to contribute to the preservation of natural habitats

Essential Questions

- What are oviparous animals? Viviparous animals?
- How do eggs differ in size, shape, and texture?
- What type of habitats are eggs laid in?

Student Objectives

Students will have an understanding of:

- The physical characteristics of eggs
- Difference in oviparous and viviparous animals and how they differ in size, shape, color and texture
- Eggs are laid on land and in water
- Which habitats support oviparous animals
- Some oviparous animals undergo a metamorphosis
- Explain how human interaction affects habitats
- The fragility and durability of eggs

Bloom’s Taxonomy Skills	21 st Century Learning Skills
<ul style="list-style-type: none"> • Creating • Evaluating • Analyzing • Applying • Understanding • Remembering 	<ul style="list-style-type: none"> • Critical Thinking • Problem Solving • Communication • Creativity & Innovation • Collaboration • Information & Media • Contextual Learning • Global/Multicultural • Research

Assessment Evidence

Performance Tasks

- Students work in collaborative groups to research an oviparous animal. Teams will choose an egg from the book An Egg is Quiet by Dianna Aston. Teacher works with small groups to use encyclopedias and internet to research and answer specific questions about the animal. A photograph of animal and egg, and a short video link to a Word Document for use when students present their research to the class. Students will work in collaborative groups to draw animal, egg, and habitat on poster for use during presentation.
- Students will collaborate with parents on a Home Fun research project. Each student will research his or her favorite Oviparous animal on-line using a checklist rubric. The students will produce a picture of their animal as well as a model of the animal's habitat. A presentation rubric for Kindergartners will be used. First and second grade students will be invited to view the projects and to inquire with the students.
- Collaborative groups of students will identify possible threats to egg laying animals' habitats presented to them visually. Students will decide which picture or piece of litter could be a threat to an Oviparous animal's habitat and illustrate that animal in its habitat.
- Participate in various experiments using raw and boiled eggs to demonstrate fragility.
 - a. "Egg Parts"
 - b. "The Answer's in the Spin"
 - c. "Egg in the bottle"
 - d. "Eggstacle Course"
 - e. "Squishy Eggs"
 - f. "Egg Drop"

Other Evidence

- Show students visuals of oviparous animals with their eggs. Put students in collaborative groups. Ask students to identify the one common attribute in the visuals.
- Create KWL Chart focusing on the "K" component
- Ask students to name egg-laying animals and non-egg laying animals. List.
- Students will list classifications of animal and their characteristics
- Various rubrics throughout unit will be used for assessing knowledge

Lesson One: "What comes from an egg?" (3-4 days)

Technology Computer, ActivBoard, Projector, Document Camera

Internet Resources

Use following links to invoke curiosity in children of what oviparous animals are and which animals are oviparous.

- **Snakes hatching:** <http://www.youtube.com/watch?v=eFb6wNHun8U>
- **Ocotpus hatching and getting food out of jar:**
<http://www.youtube.com/watch?v=V6mtZSZeM0>
- **Goose Egg hatching**
<http://www.schooltube.com/video/a83929086fd951de4622/Goose-Farm>
- **Baby chick hatching from a green egg in homemade incubator**
http://www.youtube.com/watch?v=VvoU9Gp7_Fc&feature=related
- **Baby chick hatching**
<http://www.youtube.com/watch?v=UeHzD0bkD2Q&feature=related>
- www.Thinkfinity.org
- www.google.com

Supplies/Materials

- An Egg is Quiet by Dianna Aston (resources found on www.Thinkfinity.org)
- The Egg by Pascale De Bourgoing
- Various books of both oviparous and viviparous animals

5E Lesson Format

Engage:

- Create a KWL Chart to activate prior knowledge by asking:
- What is an egg? What comes from an egg? What are the parts of an egg?
- Read The Egg

Explore:

- Students will be given an allotted amount of time to peruse various books with a partner.
- Revisit the KWL chart as a whole group and see if there is anything to add to it

Explain:

- Ask: What does it take in order for an egg to survive?
- What habitats are eggs found in?

Elaborate:

Students will work in predetermined collaborative groups for the following:

- Before reading book An Egg is Quiet by Dianna Aston, small groups will work with the teacher to do the following while other groups do an activity with teacher aide.
 - Look at first two pages of book which are pictures of many different eggs and names of eggs underneath each picture.
 - Groups choose two eggs they would like to know more about.
 - Use Encyclopedias to look up two choices. Groups must come to an agreement and decide on one egg to research
 - After looking in encyclopedias, use Google to research further on the internet.
 - With teacher's help, students will fill in a rubric finding the following information about their egg of choice:
 - Animal that comes from it
 - Does it have fur, feathers, or scales?
 - Habitat it lives in
 - Where does the animal lay eggs?
 - A short video clip about the animal (copy and paste link to Word document)
 - A picture of the animal (copy and paste picture to Word document)

Evaluate:

Students will spend several days using the research gathered during class to do the following tasks in collaborative groups:

- All students contribute to drawing the habitat the animal lives in on a poster
- One student draws and cuts out the egg (to be added to habitat poster)
- One student draws and cuts out the animal (to be added to habitat poster)
- Include initial research video clip and picture for future reference when presenting
- Collaborative groups will present and teach others about the egg and animal they researched.

Students will complete a writing activity and illustrate:

- Teacher will use Language Experience Approach to writing. Model for students the following where students will use inventive spelling to fill in the blank with an oviparous animal:
 - It started as an egg. It hatched and grew. It was a _____. All brand new!
- For illustration purposes: Students will be given a piece of decorative scrapbooking paper. They will draw large oval and cut it out. Then, students will cut egg in half using zig-zag motions. Teacher will use a brass fastener so the egg will open and close. Students will illustrate an animal on paper and will place egg over top of animal so it can be hidden and revealed. Display in hallway.

Lesson Two: "Egg Parts" (2 days)

Technology Computer, ActivBoard, Projector, Document Camera

Internet Resources

- "Ever wonder why some eggs have two yolks"
http://wonderopolis.org/?post_type=wonder&s=why+do+some+eggs+have+two+yolks&x=0&y=0

Supplies/Materials

Boiled Eggs, raw eggs, card stock paper, crayons, pencils, An Egg is Quiet by Dianna Aston, Egg Comparison Data Sheet; 10 inch piece of yarn per student, ruler for measuring

Part 1:

Students will work in collaborative groups

- Pass one boiled egg around per group so students can feel the shell
- Groups work together to peel egg; teacher cuts in half to observe egg white and yolk
- Break raw egg into clear bowl and compare
- Students work together and each will draw personal model of egg on card stock labeling the parts; egg white, yolk

Part 2:

The second part of this lesson is an egg comparison where students will measure circumference of eggs.

- Students work in small groups and rotate through centers for egg measurements.
- Measure long circumference and short circumference of two different eggs that are visually different in size
- Record observations on the Data Table
- Reflect on observations in whole group by
- Compare numbers on data table.

Lesson 3: The Answer's in the Spin (1-2 days)

Technology: Computer, ActivBoard, Projector, Document Camera, HD Flip Cam

Internet Resources

- “How to tell a boiled egg from a raw egg”
<http://www.youtube.com/watch?v=55Bs9dDJ7hI&feature=related>

Supplies/Materials

Raw Eggs (labeled “1”), Boiled Eggs (labeled “2”); raw and boiled eggs unlabeled; paper/plastic plates; Egg Exploration Rubric; bowl for cracking eggs; baskets for sorting; markers for labeling

5E Lesson format

(Use Flip Cam to video while students are engaged in collaborative work)

Engage:

- Ask: How can you tell if an egg has been boiled or not?
- Show video clip listed above

Explore:

- Students will be in collaborative groups of 3 or 4 and will be given two different eggs, one cooked, one raw. Allow a few minutes for groups to pass labeled eggs around and decipher which egg is cooked or raw
- Ask students to try other methods such as shaking to determine which is which

Explain:

- Ask: When would one need to know if an egg is raw or boiled?

Elaborate:

- Students work in collaborative groups and repeat experiment given eggs which are not labeled. They could receive one of each or two of the same.
- Students conduct experiment; student recorder in group will label eggs with a symbol representing group. Write R if they think it is raw and B if they think it's boiled

Evaluate:

- Teacher observation during collaborative group experiment
- Whole group; collaborative groups will come back to whole group and sort eggs into two baskets based on their hypothesis of raw vs boiled; teacher will crack all eggs to see who was correct
- Exploration rubric

Lesson 4: Egg in the Bottle (1 day)

Technology Computer, ActivBoard, Projector

Internet Resource

- <http://www.stevespanglerscience.com/experiment/egg-in-bottle>

Supplies/Materials

Starbucks bottles, boiled eggs, strips of paper, matches, baking soda, vinegar, pie pan, paper towels

Lesson format:

Engage:

- Ask students: Can we get this egg inside this bottle?
- Students brainstorm “How” to get egg in bottle
- Show video clips of egg in the bottle tricks using link listed above.

Explore:

- Discuss safety of using fire
- Light strips of paper and drop into bottle
- Place peeled, boiled egg on top of bottle
- Watch it drop into the bottle

Explain:

- The pressure in the bottle changes. The burning piece of paper heats the molecules of air in the bottle and causes the molecules to move far away from each other. Some of the heated molecules actually escape out past the egg that is resting on the mouth of the bottle (that’s why the egg wiggles on top of the bottle). When the flame goes out, the molecules of air in the bottle cool down and move closer together. This is what scientists refer to as a *partial vacuum*. Normally the air outside the bottle would come rushing in to fill the bottle. However, that egg is in the way! The “push” or pressure of the air molecules outside the bottle is so great that it literally pushes the egg into the bottle.

Elaborate:

- Reverse the experiment. Get the egg out of the bottle.
- Pour baking soda into bottle. Then, pour vinegar into bottle. Shake bottle a little and then turn upside down over a pan. The egg will fall out of the bottle.

Evaluate:

- Give students a template with a bottle on it. Have them illustrate how the egg got into the bottle. Look for student to draw flames inside the bottle.

Lesson 5: Floating Eggs

Technology Computer, ActivBoard, Projector

Internet Resources

- **“How to Make an Egg Float”**
Experiment: <http://pbskids.org/zoom/activities/sci/makeaneggfloat.html>
Video: <http://www.youtube.com/watch?v=2h8xaGYrg94>
What is Density: <http://www.elmhurst.edu/~chm/vchembook/120densityfs.html>

Supplies/Materials

Boiled and raw eggs, 3 containers or cups deep enough to cover eggs with water, water, salt, tablespoons, sugar, rock, crumpled piece of paper size of rock (these are used to demonstrate density)

5E Lesson Format

Engage:

- Ask: “Do eggs float?” Drop egg in plain water and see that they do not float

Explore:

- Ask: “Can you add something to the water to make egg float?”
 - Do following with three containers:
 - Container “A” – add 1 teaspoon salt
 - Container “B” – add 2 teaspoons salt
 - Container “C” – add 3 teaspoons saltDrop raw egg in each container and observe results. Egg may not float in any container.
 - Do following with three containers:
 - Container “A” – add additional 1 tablespoon salt
 - Container “B” – add additional 2 tablespoons salt
 - Container “C” – add additional 3 tablespoons saltDrop raw egg in each container and observe results. Some should float

Explain:

- As a teacher resource, review link above “What is Density?” This will help explain to students what density is. Allow students to hold rock in one hand and a crumpled piece of paper in the other to compare weights. Explain though rock is same size, it is more dense.
- Adding salt to the water squishes more molecules into the water. This makes the water denser. When there was no salt in the water, the egg was denser than the water and it sank. Adding salt to the water makes the water denser than the egg which makes the egg float. If you weigh a cup of saltwater and a cup of fresh water, the saltwater will

weigh more than the fresh water even though it is taking up the same amount of space (a cup). This is because the saltwater is denser than the fresh water.

- Demonstrate this by putting a container holding one cup of salt water and one container of fresh water on a balance scale to show that the salt water though it looks the same in volume is actually heavier due to the density.

Elaborate:

- Allow collaborative groups to repeat experiment using sugar rather than water.
- Discuss results

Evaluate:

- Did sugar yield the same results as the salt?
- Answer yes or no.

Lesson 6: “Egg Drop”

Technology Computer, ActivBoard, Projector, HD Flip cam

Internet Resources

- 8:00 minute video of a student doing an egg drop experiment: Show after we have performed the experiment.
<http://www.youtube.com/watch?v=Mb1uduZcvY4&feature=related>
- Intel: <http://www.intel.com/about/corporateresponsibility/education/k12/tools.htm>
- Visual Ranking Tool: <http://educate.intel.com/en/ThinkingTools/VisualRanking>

Supplies/Materials

packaging tape, sturdy paper bowls, raw eggs, various protectors such as bread, marshmallows, pretzel sticks, cotton balls, cheese balls, and skittles; permanent markers for labeling

5E Lesson Format

(Use Flip Cam to video while students are engaged in collaborative work)

Engage:

- Discuss, what would happen if we dropped our eggs from the top of the steps down to the pavement?
- Allow each student to drop an egg, trying to hit the bulls eye, a paint tray.

Explore:

- Whole group instruction: Display various “protectors” and discuss. Items may include the following: bread, marshmallows, pretzel sticks, cotton balls, cheese balls
- Students will be broken into predetermined collaborative groups. They will come to ActivBoard one group at a time to rank protectors in order from most protective to least protective using Intel’s online Thinking Tools at <http://www.intel.com/about/corporateresponsibility/education/k12/tools.htm> . Other groups will rotate to different stations where protectors will be available. They will be instructed to touch and manipulate the protectors and discuss what they think will be the best protector.
- After all groups have completed the rotations, come back to whole group and compare Visual Ranking results. <http://educate.intel.com/en/ThinkingTools/VisualRanking> Have discussion as to why students believe some protectors are better than others.

Explain:

- Students will design a box that will house an egg. Each group will be given a tray with all protector items. They will work collaboratively to design a house that protects the egg. They will be told they do not have to use all protector items.
- Students will check off protective items used on a rubric as they are working.

- Go outside and have students drop Egg houses from top of steps. They will do this one group at a time.

Elaborate:

- Come back together as a whole group. Open each group's egg house one at a time to observe results.
- Mark "success" or "fail" for each group on the board. Discuss why they think it was successful or why it failed.

Evaluate:

- Watch 8 minute video listed above. It is of a student who did a similar experiment.
- Reflect on our experiment by referring back to the rubric of all protector items. After the drop, we will reflect on experiment by going back and placing a check mark by which items they would use again if the experiment was repeated. If their experiment failed, I am looking for groups to discuss which protectors they thought contributed to the success or failure of the experiment.

HOME FUN

Oviparous Animal Research Fun Project

Kindergartners have been engaged in an inquiry about How the World Works with a Unit entitled "Egg-stravaganza". The central idea of this unit is: The way an animal reproduces and its natural habitat both contribute to the survival of the species. We have spent a lot of time in the classroom learning and researching about animals classified as oviparous animals which means they are born from an egg. We are now extending this fun at home with a home project. Your child may choose any oviparous animal to complete this project. Please look at the rubric on the following page and help your child complete it. Have fun learning together. Rubrics and art projects will be due on Thursday, April 5. Each child will present projects by showing art project and talking about what he/she learned. A parent may help student write the information on the rubric.

Mrs. XX

Home Fun Rubric

Question or Information to be Gathered	Answer to Question, Special Instructions from Teacher and/or Check Mark to Indicate Completion
<ul style="list-style-type: none"> What is the name of your oviparous animal? 	
<ul style="list-style-type: none"> Have Mom or Dad help you go to www.google.com. Type in the name of your animal and then click images. Find your favorite picture of the animal you are researching and print it. 	
<ul style="list-style-type: none"> Have Mom or Dad help you go to www.google.com. Type in the name of your animal and then click videos. Find a short video clip of your animal and watch it. (If it is a homemade clip, parents preview first to check for appropriateness.) 	<p>If you have a short 2-3 minute clip your child would like to show for his/her presentation, please e-mail the link to me at XXX. Please put "Video Link for Research Project" in the subject line.</p>
<ul style="list-style-type: none"> Does the animal have scales, feathers, or fur? 	
<ul style="list-style-type: none"> Does a parent sit on the eggs for them to incubate? If so, which parent, the mom, or dad? 	
<ul style="list-style-type: none"> What type of habitat does the oviparous animal live in? 	
<ul style="list-style-type: none"> Have a parent help you brainstorm a few things that could endanger your animal's habitat. 	
<ul style="list-style-type: none"> Write or tell anything special you want to teach others about your oviparous animal. 	

<ul style="list-style-type: none">• Make a visual representation of your animal's habitat and include your animal in the habitat.	<p>Examples of this:</p> <ul style="list-style-type: none">• Poster or picture• Diorama made in shoebox• Empty Gallon container (Chick-Fil-A) with top cut off and items inside which depict habitat• Small container to represent water (aquarium) habitat <p>You may include a printed picture of your animal or a stuffed animal in your habitat.</p>

Home Fun Project

How the World Works - "Egg-stravaganza"

Teacher Checklist Rubric

Student Name _____



Assignment	Choose Yes or No	
Completed Oviparous Animal Student Rubric	yes	no
Created a visual representation of habitat	yes	no
Turned in on time	yes	no
Presented project to class	yes	no
Was enthusiastic during project presentation	yes	no

Information teacher is to look for or ask for during the presentation.

Information	Check if information was given or asked to the student.
1. Name of your animal	
2. Where it lays eggs	
3. What type of habitat animal lives in	
4. Special or interesting facts about animal	

Teacher signature

Student Checklist Rubric

Team members' names: _____

Research Project on Oviparous Animals

Project designed using book: An Egg is Quiet by Donna Aston

Your teacher will give you the following materials: card stock paper, one sheet of poster paper, markers, crayons, scissors, glue sticks, and your information sheet where you gathered data. In your small groups, complete the following tasks using the information you gathered while working with your teacher.

Task	Check when complete
1. One person draws the animal's egg and cuts it out.	
2. One person draws the animal and cuts it out.	
3. Work as a team to draw the habitat your animal lives in.	
4. Glue down your egg and animal in your habitat.	
5. Clean up your work space	

Sign your name:

Names _____ and _____

Build an "Egg" house.

Follow steps to create a house for your egg that will protect it.

	<p>Check when complete</p> <p>✓</p>
1. Choose Protectors	
2. Put egg in house and cover with protectors	
3. Put top on house and tape all around	
4. Write Names on top of house	

Names _____ and _____



Egg Drop

Use any of the following items to build a house for your egg that will protect it in the event of a fall. Place a check mark beside the items you used in your house.

	1	2
	BEFORE the DROP	AFTER the DROP
	Check the items you and your partner used to make your egg house.	Check the items you would use again if you repeated this activity.
Cotton Balls		
Pretzel Sticks		
Cheese Puffs		
Rice Crispies		
Bread		
Marshmallows		
Chex Cereal		

Egg Drop

Results Rubric

	 House Protected Egg	 House Did Not Protect Egg
Team 1:		
Team 1:		
Team 2:		
Team 2:		
Team 3:		
Team 3:		