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| **Lesson Title: Life Cycle Museum** |  |
| **Grade Level: 2** | **Quarter: 4** |
| **Standards:****S2L1a Sequence of Life Cycle of Common Animals**Determine the sequence of the life cycle of common animals in your area: a mammal such as a cat or dog or classroom pet, a bird such as a chicken, an amphibian such as a frog, and an insect such as a butterfly.**Math:****MGSE.2.G.2** Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. **T1 Creativity and Innovation**Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. |
| **Lesson Essential Question:** How can I describe the life cycle of different living things?How can I partition a rectangle? | **Vocabulary:**born, hatched, offspring, adults, reproducing  |
| **Lesson Materials**construction paper, string, straws, brads, crayons, scissors, glue, Mackinvia, shoebox or small box, crayons, colored pencils, clay | **Lesson Assessment:** Student checklist self- assessmentStudent JournalTeacher Observations  |
| **STEM Challenge Overview:**The Georgia Department of Natural Resources has hired you to help educate its citizens on animal life cycles. You will create a museum shoebox showing the life cycle of a common animal that will be displayed in their museum. The museum must accurately show the life cycle of a common animal of each student’s choice. The museum shoebox must be equally proportioned. |
| **Teacher Background:*** Students will work in groups of 2-3.
* Teacher will need to allow time for students to use Mackinvia to research animal life cycles.
* Students will create a museum shoebox showing the life cycle of their animals. Students should add pop ups and other moving parts. Teacher may want to review a variety of pop up creations using <http://bookzoompa.wordpress.com/2011/10/07/a-nod-to-how-to-make-pop-ups/> (only if students have not made pop ups in the past or during art)
* Students will use a digital writing tool to create labels, titles, etc. using at three 3 fonts that vary in size.
* Museum boxes will be displayed at the end of the activity in order for all the students to observe. Teacher may want to provide a graphic organizer for students needing help with the research part of this lesson.
* Students should have a review about partitioning
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| **INSTRUCTION** |
| 1. **Ask/Engage**

**Day 1:45- 60 minutes** |
| * Engage students by showing very vivid pictures from <http://www.kidsdiscover.com/spotlight/metamorphosis-kids/?mc_cid=c058dae986&mc_eid=028eba0285> and telling them they will have an opportunity to create an innovative museum shoe box depicting a life cycle.
* Create a chart of different common animals with the students. Have students discuss the animals’ life cycles that you may have learned about prior to this activity. Allow students to choose one animal for their research. Students should research their animal using Mackinvia.
* Share the Challenge with the students:
* The Georgia Department of Natural Resources has hired you to help educate its citizens on animal life cycles. You will create a museum shoebox showing the life cycle of a common animal that will be displayed in their museum. The museum must accurately show the life cycle of a common animal of each student’s choice. The museum shoebox must be equally proportioned.
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| 1. **Imagine/Brainstorm**

**Day 2: 45 minutes** |
| Ask each student to work independently to come up with 1-2 possible design solutions. Students should draw/label their designs. **Introduce the constraints of the design plan:**1. You must use the materials provided.2. You must fit all information inside your box.3. Your box must be portable. (it has to be moved without anything falling out)4. Your box must be proportioned equally **Define the criteria for success:*** The museum is neat.
* The museum has a pop up.
* The museum has an additional moving part.
* The museum accurately shows the life cycle of a common animal.
* The museum has an interesting title.
* The colors used are realistic.
* A digital writing tool was used to create labels, titles, etc. using at three 3 fonts that vary in size.
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| 1. **Plan/Design**

**Continued: Day 2** |
| * Students present their ideas to their team.
* Student teams collaborate to come up with final design plan. Students draw final design plan and make a list of needed supplies.
* This will allow for group collaboration and input of others during the design process.
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| 1. **Create / Test**

**Day 3: 60 minutes (you may need to split into more days)** |
| Student teams build their design according to their design plan. Students test their design plan and use their checklist. |
| 1. **Evaluate/Improve –** and repeat Steps 1-5

**Day 4** |
|  Students evaluate their design for success. Did it meet the established criteria? Did their final design match their planned design? How would students improve their design?* Students will display their finished museums on their desks. Students will walk around the room and view the museums. Ticket out door assessment: Students will fold a drawing paper in half and on each side will illustrate the life cycle of two animals they observed during their walk.
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Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Life Cycle Museum STEM Challenge**

 **2nd Grade**

**Challenge**: The Georgia Department of Natural Resources has hired you to help educate its citizens on animal life cycles. You will create a museum shoebox showing the life cycle of a common animal that will be displayed in their museum.

**Criteria:**

1. My museum is neat. \_\_\_\_

2. My museum has a pop up. \_\_\_\_

3. My museum has an additional moving part. \_\_\_

4. My museum accurately shows the life cycle of a common animal. \_\_\_

5. My museum has an interesting title. \_\_\_\_

6. The colors I used are realistic. \_\_\_\_\_

7. I used a digital writing tool to create labels, titles, etc. using at three 3 fonts that vary in size.\_\_\_

8. I equally partitioned my museum. \_\_\_\_

**Constraints:**

1. You must use the materials provided.

2. You must fit all information inside your box.

3. Your box must be portable. (it has to be moved without anything falling out)

**Materials:**

construction paper, string, straws, brads, crayons, scissors, glue, box, clay

1. **ASK / ENGAGE:** What is the problem you are being asked to solve?

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1. **IMAGINE/BRAINSTORM:** What are some possible solutions to the problem that you are trying to solve? After you brainstorm, draw and label your ideas below.

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| **Idea #1** | **Idea #2** |

1. **PLAN/DESIGN:** Share your ideas with your group and collaborate to decide on a final design plan. Draw your team’s design below and make a list of the materials that you will need to complete your design.

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| **Team Design Plan** | **Materials List** |

1. **CREATE/TEST**: Use your Final Design Plan to create and build your solution. Test your design. Did it work? Why or Why not?

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1. **EVAULATE/IMPROVE:**  How well did your design work? Did your solution solve the problem within the given constraints?

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How can you improve your design? How can you make it better? Draw and label your improved design below.

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| **Improved Design Plan** |